DRINKING WATER SURVEILLANCE PROGRAM

NAPANEE WATER TREATMENT PLANT

REPORT FOR 1991 AND 1992

Ontario

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REPORT FOR 1991 AND 1992

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EXECUTIVE SUMMARY

DRINKING WATER SURVEILLANCE PROGRAM

NAPANEE WATER TREATMENT PLANT
1991 AND 1992 REPORT

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to include all municipal supplies in Ontario. In 1991, 96 supplies and in 1992, 109 supplies were being monitored.

The Napanee water treatment plant is a conventional treatment plant which treats water from Lake Ontario. The process consists of coagulation, flocculation, sedimentation, filtration and disinfection. Chlorine is added at the mouth of the intake structure for zebra mussel control when the raw water temperature is above 12°C. This plant has a design capacity of 12.7 x 1000 m^3/day. The Napanee water treatment plant serves a population of approximately 5,000.

Water at the plant and at one location in the distribution system was sampled for the presence of approximately 180 parameters. Parameters were divided into the following groups: bacteriological, inorganic and physical (laboratory chemistry, field chemistry and metals), organic (chloroaromatics, chlorophenols, pesticides and PCB, phenolics, polyaromatic hydrocarbons and volatiles) and radiological (radionuclides). Most laboratory analyses were conducted at the Ministry of the Environment and Energy facilities in Rexdale, Ontario. Radionuclides were analyzed by the Ministry of Labour.

Table A is a summary of all results by group.

The health related guideline for turbidity was exceeded in one treated water sample. The District Officer was notified.

No other known health related guidelines were exceeded.

The Napanee water treatment plant, for the sample years 1991 and 1992, produced acceptable quality water and this was maintained in the distribution system.

TABLE A
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

SUMMARY TABLE BY SCAN

A POSITIVE VALUE DENOTES THAT THE RESULT IS GREATER THAN THE STATISTICAL LIMIT OF DETECTION AND IS QUANTIFIABLE
A '.' INDICATES THAT NO SAMPLE WAS TAKEN

SCAN	SITE RAW TESTS	RAW POSITIVE	RAW %POSITIVE	TREATED TESTS	TREATED POSITIVE	TREATED %POSITIVE	SIMCOE ST S TESTS	SIMCOE ST S POSITIVE	SIMCOE ST S %POSITIVE
BACTERIOLOGICAL	48	23	47	16	6	37	15	5	33
CHEMISTRY (FIELD)	53	53	100	96	96	100	185	181	97
CHEMISTRY (LABORATORY)	400	345	86	408	314	76	685	597	87
METALS	408	129	31	408	128	31	759	285	37
CHLOROAROMATICS	153	0	0	167	0	0	167	0	0
CHLOROPHENOLS	18	0	0	18	0	0	.	.	.
PESTICIDES AND PCB	384	0	0	406	1	0	265	2	0
PHENOLICS	17	1	5	17	2	11	.	.	.
POLYAROMATIC HYDROCARBONS	84	0	0	67	0	0	67	0	0
SPECIFIC PESTICIDES	54	0	0	55	0	0	1	0	0
VOLATILES	478	5	1	507	64	12	507	67	13
RADIONUCLIDES	14	2	14	14	3	21	.	.	.
TOTAL	2,111	558		2,179	614		2,651	1,137	

DRINKING WATER SURVEILLANCE PROGRAM

NAPANEE WATER TREATMENT PLANT
1991 AND 1992 REPORT

INTRODUCTION

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to include all municipal supplies in Ontario. In 1991, 96 supplies and in 1992, 109 supplies were being monitored.

Appendix A has a full description of the DWSP.

The DWSP was initiated for the Napanee water treatment plant in March 1991. This is the first published DWSP annual report for the combined years of 1991 and 1992.

PLANT DESCRIPTION

The Napanee water treatment plant is a conventional treatment plant which treats water from Lake Ontario. The process consists of coagulation, flocculation, sedimentation, filtration and disinfection. Chlorine is added at the mouth of the intake structure for zebra mussel control when the raw water temperature is above 12°C. This plant has a design capacity of 12.7 x 1000 m^3/day. The Napanee water treatment plant serves a population of approximately 5,000.

The sample day flows ranged from 0.93 x 1000 m^3/day to 3.9 x 1000 m^3/day.

General plant information is presented in Table 1 and a schematic of plant processes, chemical addition points and sampling locations in Figure 1.

SAMPLING AND ANALYSES

Stringent DWSP sampling protocols were followed to ensure that all samples were collected in a uniform manner (see Appendix B).

Sample lines in the plant were flushed prior to sampling to ensure that the water obtained was indicative of its origin and not residual water standing in the sample line.

Attempts were made to capture the same block of water at each sampling point by taking the retention time into consideration. Retention time was calculated by dividing the volume of water between two sampling points by sample day flow. For example, if it was determined that retention time within the plant was five hours, then there would be a five hour interval between the raw and treated sampling. Similarly, if it was estimated that it took approximately one day for the water to travel from the plant to the distribution system site, this site would be sampled one day after the treated water from the plant.

To obtain a representative raw water sample, free from any added chemicals, at plants which used chlorine for zebra mussel control, the operator was required to turn off the chlorine feed to the beginning of the intake and allow enough time for the chlorinated water to clear from the intake structure.

Plant operating personnel routinely analyzed parameters for process control (Table 2).

At all distribution system locations, two types of samples were obtained, a standing and a free flow. The standing sample consisted of water that had been in the household plumbing and service connection for a minimum of six hours. These samples were used to make an assessment of the change in the levels of inorganic compounds and metals due to leaching from, or deposition on, the plumbing system. The only analyses carried out on the standing samples, therefore, were laboratory chemistry and metals. The free flow sample represented fresh water from the distribution system main, since the sample tap was flushed for five minutes prior to sampling.

Water at the plant and at one location in the distribution system was sampled for the presence of approximately 180 parameters. Parameters were divided into the following groups: bacteriological, inorganic and physical (laboratory chemistry, field chemistry and metals), organic (chloroaromatics, chlorophenols, pesticides and PCB, phenolics, polyaromatic hydrocarbons and volatiles) and radiological (radionuclides). Most laboratory analyses were conducted at the Ministry of the Environment and Energy facilities in Rexdale, Ontario. Radionuclides were analyzed by the Ministry of Labour.

RESULTS

Field measurements were recorded on the day of sampling and were entered onto the DWSP database as submitted by plant personnel.

Table 3 contains information on delay time between the raw and treated water sampling, flow rate, and treatment chemicals dosages.

Table 4 is a summary of all results by parameter and by water type. If a parameter was not detected, the total number of negative sample results is given. In contrast, if a parameter was detected at any location, the detailed results for all samples are provided.

Positive denotes that the result is greater than the statistical limit of detection established by the Ministry of the Environment and Energy laboratory staff and is quantifiable. Trace (<T) denotes that the level measured is greater than the lowest value detectable by the method but lies so close to the detection limit that it cannot be confidently quantified.

Table 5 lists all parameters analyzed in the DWSP.

Associated guidelines and detection limits are also supplied on Tables 4 and 5. Parameters are listed alphabetically within each scan.

DISCUSSION

GENERAL

Water quality was judged by comparison with the Ontario Drinking Water Objectives publication (ODWOs). When an Ontario Drinking Water Objective (ODWO) was not available, guidelines/limits from other agencies were used. These guidelines were obtained from the Parameter Listing System database.

The guidelines are evaluated on the results from the free flowing samples. Standing samples in the distribution system can show elevated concentrations in certain metals if the water is corrosive or if the standing time is excessive. Flushing the tap until the water achieves the coolest temperature will ensure that the water used for consumption will contain minimum concentrations of metals.

IN THIS REPORT, DISCUSSION IS LIMITED TO:

- **THE TREATED AND DISTRIBUTED WATER;**
- **ONLY THOSE PARAMETERS WITH CONCENTRATIONS ABOVE GUIDELINE VALUES; AND**
- **POSITIVE ORGANIC PARAMETERS DETECTED.**

BACTERIOLOGICAL

Guidelines for bacteriological sampling and testing of a supply are developed to maintain a proper supervision of its bacteriological quality. Routine monitoring programs usually require that multiple samples be collected in a given system. Full interpretation of bacteriological quality cannot be made on the basis of single samples. Standard plate count was the only bacteriological analysis conducted on the treated and distributed water.

Standard plate count is a test used to supplement routine analys for coliform bacteria. The limit for standard plate count (at 35°C after 48 hours) in the ODWOs is 500 counts/mL (based on a geometric mean of 5 or more samples). DWSP bacteriological analysis of treated and distributed water was limited to standard plate count.

Standard plate count (membrane filtration) exceeded the ODWO Aesthetic Objective of 500 counts/mL in 4 of 31 treated and distributed water samples with a maximum reported value of >2,400 counts/mL.

INORGANIC & PHYSICAL

CHEMISTRY (FIELD)

It is desirable that the temperature of drinking water be less than 15°C. The palatability of water is enhanced by its coolness. A temperature below 15°C will tend to reduce the growth of nuisance organisms and hence minimize associated taste, colour, odour and corrosion problems. The temperature of delivered water may increase in the distribution system due to the warming effect of soil in late summer and fall and/or as a result of higher temperatures in the source water.

Field temperature exceeded the ODWO Aesthetic Objective of 15°C in 16 of 32 treated and distributed water samples with a maximum reported value of 21.9°C.

Protocol for turbidity states that laboratory and field measurements should be made within 48 hours. This is only achieved consistently when measured in the field; therefore, the field turbidity values are considered more reliable.

Field turbidity exceeded the ODWO Maximum Acceptable Concentration of 1.0 FTU in 1 of 17 treated water samples with a maximum reported value of 1.1 FTU. The District Officer was notified.

CHEMISTRY (LABORATORY)

Colour in drinking water may be due to the presence of natural or synthetic substances as well as certain metallic ions. Colour is measured in Hazen units (HZU).

Colour exceeded the ODWO Aesthetic Objective of 5 HZU in 3 of 34 treated and distributed water samples with a maximum reported value of 10.0 HZU.

The ODWOs indicate that a hardness level of between 80 and 100 mg/L as calcium carbonate for domestic waters provides an acceptable balance between corrosion and encrustation. Water supplies with a

hardness greater than 200 mg/L are considered poor and possess a tendency to form scale deposits and result in excessive soap consumption.

Hardness exceeded the ODWO Recommended Operational Guideline of 80-100 mg/L in all 33 treated and distributed water samples with a maximum reported value of 136.0 mg/L.

Turbidity in water is caused by the presence of suspended matter such as clay, silt, colloidal particles, plankton and other microscopic organisms. The most important potential health effect of turbidity is its interference with disinfection in the treatment plant and the maintenance of a chlorine residual. The ODWO Maximum Acceptable Concentration for turbidity is 1.0 Formazin Turbidity Unit (FTU) and applies to the water leaving the treatment facility.

Turbidity exceeded the ODWO Maximum Acceptable Concentration of 1.0 FTU in 1 of 17 treated water samples with a maximum reported value of 1.29 FTU which was confirmed by the corresponding and more reliable field turbidity result.

METALS

At present, there is no evidence that aluminum is physiologically harmful and no health limit for drinking water has been specified. The measure of aluminum in treated water is important to measure the efficiency of the treatment process. The ODWOs indicate that a useful guideline is to maintain a residual below 100 ug/L as aluminum in the water leaving the plant to avoid problems in the distribution system.

Aluminum exceeded the ODWO Recommended Operational Guideline of 100 ug/L in 30 of 34 treated and distributed water samples with a maximum reported value of 560.0 ug/L.

ORGANIC

CHLOROAROMATICS

The results of the chloroaromatic scan showed that none were detected above trace levels.

CHLOROPHENOLS

The results of the chlorophenol scan showed that none were detected above trace levels.

PESTICIDES AND PCB

Hexachlorocyclopentadiene was found at positive levels in 3 of the 14 treated and distributed water samples analyzed. The maximum

observed level was 160.0 ng/L. This was below the United Stat Environmental Protection Agency Ambient Water Quality Criteria c 206,000 ng/L.

PHENOLICS

Phenolic compounds are present in the aquatic environment as a result of natural and/or industrial processes. The ODWOs have been revised to replace the aesthetic phenolic objective with objectives for specific phenols.

Phenolics were found at positive levels in 2 of the 17 treated and distributed water samples analyzed. The maximum observed level was 1.2 ug/L.

POLYAROMATIC HYDROCARBONS

The results of the polyaromatic hydrocarbon scan showed that none were detected.

SPECIFIC PESTICIDES

The results of the specific pesticide scan showed that none were detected.

VOLATILES

The detection of benzene, ethylbenzene, toluene and xylenes at low, trace levels may be a laboratory artifact derived from the analytical methodology. Trace levels of styrene are considered to be laboratory artifacts resulting from the sample shipping containers.

1,1,1-trichloroethane was found at a positive level in 1 of the 34 treated and distributed water samples analyzed. The maximum observed level was 0.48 ug/L. This was below the United States Environmental Protection Agency Maximum Contaminant Level of 200 ug/L.

Trihalomethanes (THMs) are produced during the water treatment process and will always occur in chlorinated waters. THMs are comprised of chloroform, chlorodibromomethane and dichlorobromomethane. Bromoform occurs occasionally. Results are reported for the individual compounds as well as for total THMs. Only total THM results are discussed. Starting in 1991, samples from the distribution system were quenched with sodium thiosulphate to stop the further production of THMs in the sample bottle. This provided a more representative estimation of the THMs consumed in tap water.

Total trihalomethanes were found at positive levels in all 34 treated and distributed water samples analyzed with a maximum level

of 63.7 ug/L. This was below the ODWO Maximum Acceptable Concentration of 350 ug/L.

Trihalomethanes were detected at positive levels in one raw water sample due to insufficient flushing of chlorine which was added at the mouth of the intake to prevent zebra mussels from adhering to the intake pipe and low lift structures.

RADIOLOGICAL

RADIONUCLIDES

There are more than 200 radionuclides, some of which occur naturally and others which originate from the activities of society. The radionuclides currently of greater interest from a health view-point are tritium, strontium-90, iodine-131, cesium-137 and radium-226. The gross beta and gross alpha determinations are suitable for preliminary screening except for tritium which must be measured separately. Radionuclides are measured in becquerels per litre (Bq/L). No results were above the available guidelines.

CONCLUSIONS

The health related guideline for turbidity was exceeded in one treated water sample. The District Officer was notified.

No other known health related guidelines were exceeded.

The Napanee water treatment plant, for the sample years 1991 and 1992, produced acceptable quality water and this was maintained in the distribution system.

FIGURE 1

NAPANEE WATER TREATMENT PLANT

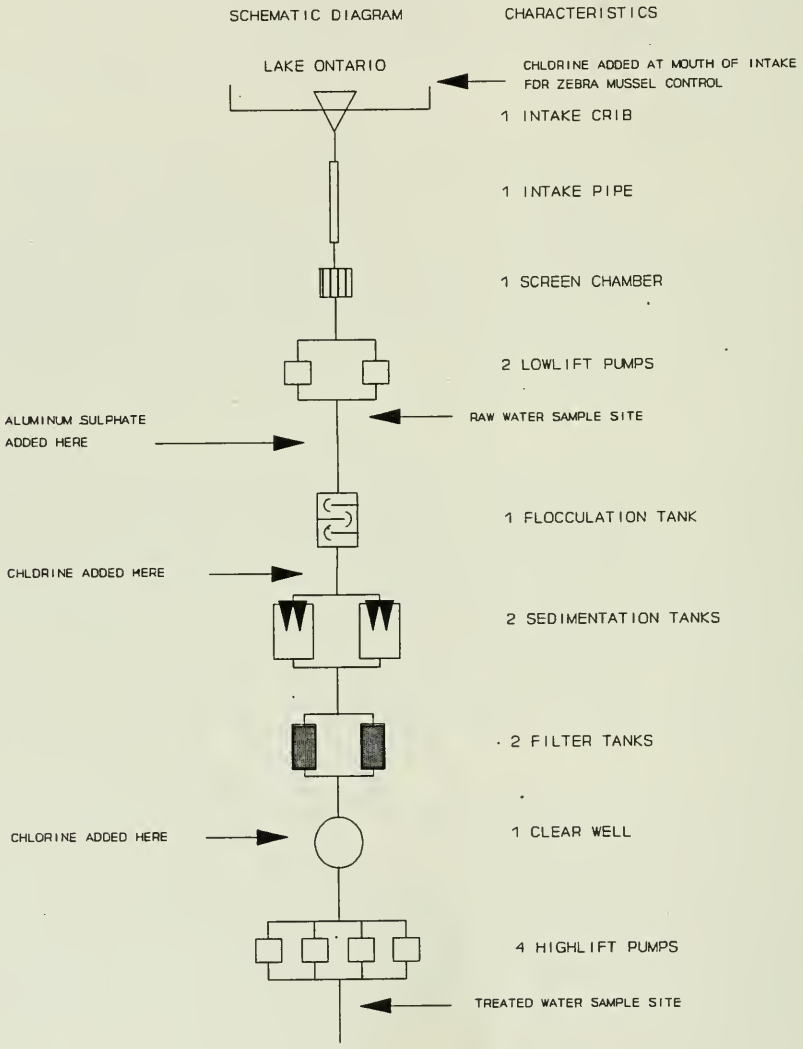

TABLE 1

DRINKING WATER SURVEILLANCE PROGRAM

PLANT GENERAL REPORT

PLANT NAME:	NAPANEE WTP
WORKS #:	220002226
UTM #:	183520004888900
DISTRICT:	KINGSTON
REGION:	SOUTHEAST
DISTRICT OFFICER:	J. TOOLEY
SUPERINTENDENT	ORVAL CLEMENT
ADDRESS:	75 EAST ST. NAPANEE, ONTARIO K7R 1S3 613-354-9338
MUNICIPALITY:	NAPANEE
AUTHORITY:	MUNICIPAL

PLANT INFORMATION

PLANT VOLUME:	5.030	(X 1000 M3)
DESIGN CAPACITY:	12.700	(X 1000 M3/DAY)
RATED CAPACITY:	-	(X 1000 M3/DAY)

MUNICIPALITY	POPULATION
NAPANEE	5,000

TABLE 2
DRINKING WATER SURVEILLANCE PROGRAM
IN-PLANT MONITORING

PARAMETER	LOCATION	FREQUENCY
ALKALINITY	RAW	MONTHLY
	TREATED	MONTHLY
COMBINED CHLORINE RESIDUAL	TREATED	HOURLY
COLOUR	RAW	DAILY
	TREATED	DAILY
HARDNESS	RAW	MONTHLY
	TREATED	MONTHLY
PH	RAW	DAILY
	TREATED	DAILY
TURBIDITY	RAW	DAILY
	TREATED	DAILY

TABLE 3
DRINKING WATER SURVEILLANCE PROGRAM NAPANEE WTP SAMPLE DAY CONDITIONS
AND TREATMENT CHEMICAL DOSAGES FOR 1991 AND 1992

DATE	DELAY * TIME(HRS)	FLOW (1000M3)	COAGULATION ALUM LIQUID	PRE CHLORINATION CHLORINE	POST CHLORINATION CHLORINE
91 MAR 26	.00	-	12.00	.	2.60
91 APR 22	.	.	.	.	.
91 MAY 28	.	.	.	.	.
91 JUN 25	.	.	.	.	.
91 JUL 23	.	.	.	.	.
91 AUG 27	.00	1.222	.	.	1.80
91 SEP 24	.00	1.029	6.00	2.00	.
91 OCT 29	.00	1.051	8.00	.	2.10
91 NOV 26	.00	.932	9.20	1.50	1.50
92 JAN 28	.00	1.547	21.03	1.30	.
92 FEB 25	3.00	1.147	19.18	1.53	1.53
92 MAR 24	.00	1.104	12.95	.	1.39
92 APR 29	.00	.990	27.77	3.33	.
92 JUN 23	.00	.963	9.12	.	.70
92 JUL 28	.00	1.171	14.08	.	1.13
92 SEP 30	3.00	3.949	31.65	.	3.79

* THE DELAY TIME BETWEEN THE RAW AND TREATED WATER SAMPLING, SHOULD ESTIMATE THE RETENTION TIME.

KEY TO TABLE 4 and 5

A ONTARIO DRINKING WATER OBJECTIVES (ODWO)
- 1. Maximum Acceptable Concentration (MAC)
- 1+. MAC for Total Trihalomethanes
- 2. Interim Maximum Acceptable Concentration (IMAC)
- 3. Aesthetic Objective (AO)
- 3*. AO for Total Xylenes
- 4. Recommended Operational Guideline
- 5. Health Related Guidance Value

B HEALTH & WELFARE CANADA (H&W)
- 1. Maximum Acceptable Concentration (MAC)
- 2. Proposed MAC
- 3. Interim MAC
- 4. Aesthetic Objective (AO)

C WORLD HEALTH ORGANIZATION (WHO)
- 1. Guideline Value (GV)
- 2. Tentative GV
- 3. Aesthetic GV

D US ENVIRONMENTAL PROTECTION AGENCY (EPA)
- 1. Maximum Contaminant Level (MCL)
- 2. Suggested No-Adverse Effect Level (SNAEL)
- 3. Lifetime Health Advisory
- 4. EPA Ambient Water Quality Criteria

F EUROPEAN ECONOMIC COMMUNITY (EEC)
- 1. Health Related Guideline Level
- 2. Aesthetic Guideline Level
- 3. Maximum Admissable Concentration (MADC)

G CALIFORNIA STATE DEPARTMENT OF HEALTH-GUIDELINE VALUE

I NEW YORK STATE AMBIENT WATER GUIDELINE

N/A NONE AVAILABLE

LABORATORY RESULTS, REMARK DESCRIPTIONS

.	No Sample Taken
BDL	Below Minimum Measurement Amount
<T	Greater Than Detection Limit But Not Confident (SEE INTERPRETATION OF RESULTS ABOVE)
>	Results Are Greater Than The Upper Limit
<=>	Approximate Result
!48	No Data: Sample Age Exceeded 48 Hours
!AR	No Data: No Numeric Results
!AW	No Data: Analysis Withdrawn
!BT	No Data: Sample Broken In Transit
!CS	No Data: Contamination Suspected
!EF	No Data: Laboratory Equipment Failure
!IR	No Data: Insufficient Sample
!IS	No Data: Insufficient Sample
!LA	No Data: Laboratory Accident
!NP	No Data: No Procedure
!NR	No Data: Sample Not Received
!OP	No Data: Obscured Plate
!PE	No Data: Procedure Error: Sample Discarded
!PR	No Data: Preservative Required
!QU	No Data: Quality Control Unacceptable
!RE	No Data: Received Empty
!RO	No Data: No Numeric Results
!SM	No Data: Sample Missing
!SS	No Data: Sample Improperly Preserved
!U	No Data: Sample Unsuitable For Analysis
!UB	No Data: Bottle Broken
!UN	No Data: Result Unreliable

!UR	No Data: Unpreserved Sample Required
A	Approximate Value
A3C	Approximate, Total Count Exceeded 300 Colonies
A>	Approximate Value, Exceeded Normal Range
APS	Additional Peak, Less Than, Not Priority Pollutant
ARO	Additional Information In Laboratory Report
CRO	Calculated Result Only
NAF	Not All Required Tests Found
RID	Ioncal Calculated on Incomplete Data Set
RMP	P and M-Xylene Not Separated
RRR	Result Obtained by Repeat Analysis
RRV	Rerun Verification
SFA	Sample Filtered: Filtrate Analyzed
SIL	Sample Incorrectly Labelled
SPS	Several Peaks, Small, Not Priority Pollutant
U48	Unreliable: Sample Age Exceeded 48 Hours
UAL	Unreliable: Sample Age Exceeded Limit
UAU	Unreliable: Sample Age Unknown
UCS	Unreliable: Contamination Suspected
WSD	Wrong Sample Description On Bottle

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
BACTERIOLOGICAL				
FECAL COLIFORM MF (CT/100ML)		**DET'N LIMIT = 0**		**GUIDELINE = 0 (A1)**
1991 MAR	BDL	.	.	.
1991 APR	0	.	.	.
1991 MAY	0	.	.	.
1991 JUN	0	.	.	.
1991 JUL	1	.	.	.
1991 AUG	0	.	.	.
1991 OCT	0	.	.	.
1991 NOV	0	.	.	.
1992 JAN	0	.	.	.
1992 FEB	0	.	.	.
1992 MAR	0	.	.	.
1992 APR	0	.	.	.
1992 JUN	2	.	.	.
1992 JUL	0 A3C	.	.	.
1992 SEP	BDL	.	.	.
1992 NOV	0	.	.	.
STANDRD PLATE CNT MF (CT/ML)		**DET'N LIMIT = 0**		**GUIDELINE = 500 (A3)**
1991 MAR	.	46	43	.
1991 APR	.	12	5 <=>	.
1991 MAY	.	7 <=>	.	.
1991 JUN	.	7 <=>	99	.
1991 JUL	.	2400 >	2400 >	.
1991 AUG	.	2400 >	1150	.
1991 OCT	.	5 <=>	0 <=>	.
1991 NOV	.	6 <=>	5 <=>	.
1992 JAN	.	1 <=>	0 <=>	.
1992 FEB	.	0 <=>	1 <=>	.
1992 MAR	.	0 <=>	3 <=>	.
1992 APR	.	18	6 <=>	.
1992 JUN	.	4 <=>	36	.
1992 JUL	.	120	5 <=>	.
1992 SEP	.	1 <=>	2 <=>	.
1992 NOV	.	3 <=>	5 <=>	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
BACTERIOLOGICAL				
TOTAL COLIFORM MF (CT/100ML)		DET'N LIMIT = 0		GUIDELINE = 5/100ML (A1)
1991 MAR	32	.	.	.
1991 APR	16	.	.	.
1991 MAY	BDL	.	.	.
1991 JUN	BDL	.	.	.
1991 JUL	BDL	.	.	.
1991 AUG	BDL	.	.	.
1991 OCT	10 <=>	.	.	.
1991 NOV	10 <=>	.	.	.
1992 JAN	20 <=>	.	.	.
1992 FEB	BDL	.	.	.
1992 MAR	4 A3C	.	.	.
1992 APR	BDL	.	.	.
1992 JUN	44 A3C	.	.	.
1992 JUL	32 A3C	.	.	.
1992 SEP	BDL	.	.	.
1992 NOV	230 A3C	.	.	.
T COLIFORM BCKGRD MF (CT/100ML)		DET'N LIMIT = 0		GUIDELINE = N/A
1991 MAR	164	.	.	.
1991 APR	192	.	.	.
1991 MAY	9600 >	.	.	.
1991 JUN	6800 A3C	.	.	.
1991 JUL	9600 >	.	.	.
1991 AUG	9600 >	.	.	.
1991 OCT	24000 >	.	.	.
1991 NOV	13000 A3C	.	.	.
1992 JAN	3000 A3C	.	.	.
1992 FEB	60 <=>	.	.	.
1992 MAR	2800 A3C	.	.	.
1992 APR	840	.	.	.
1992 JUN	9600 >	.	.	.
1992 JUL	9600 >	.	.	.
1992 SEP	15000 A3C	.	.	.
1992 NOV	9700 A3C	.	.	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

CHEMISTRY (FIELD)

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
FLD CHLORINE (COMB) (MG/L)		DET'N LIMIT = 0		GUIDELINE = N/A
1991 MAR	.	.200	.200	.
1991 APR	.	.300	.100	.000
1991 MAY	.	.200	.200	.200
1991 JUN	.	.100	.300	.000
1991 JUL	.150	.100	.200	.100
1991 AUG	.100	.200	.200	.100
1991 SEP	.	.200	.300	.200
1991 OCT	.	.200	.200	.050
1991 NOV	.	.100	.200	.100
1992 JAN	.	.200	.200	.200
1992 FEB	.	.200	.200	.100
1992 MAR	.	.200	.100	.100
1992 APR	.	.200	.200	.100
1992 JUN	.	.200	.200	.100
1992 JUL	.	.200	.200	.100
1992 SEP	.	.200	.200	.100
FLD CHLORINE FREE (MG/L)		DET'N LIMIT = 0		GUIDELINE = N/A
1991 MAR	.	.200	.200	.
1991 APR	.	.300	.700	.200
1991 MAY	.	.300	.300	.200
1991 JUN	.	.300	.200	.100
1991 JUL	.	.300	.100	.000
1991 AUG	.100	.200	.200	.100
1991 SEP	.	.500	.300	.300
1991 OCT	.	.300	.100	.050
1991 NOV	.	.300	.300	.100
1992 JAN	.	.400	.300	.400
1992 FEB	.	.300	.300	.200
1992 MAR	.	.300	.200	.100
1992 APR	.	.300	.300	.000
1992 JUN	.	.500	.400	.100
1992 JUL	.	.300	.200	.100
1992 SEP	.	.200	.200	.100

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
CHEMISTRY (FIELD)				
FLD CHLORINE (TOTAL) (MG/L)		DET'N LIMIT = 0		GUIDELINE = N/A
1991 MAR	.	.400	.400	.
1991 APR	.	.600	.800	.200
1991 MAY	.	.500	.500	.
1991 JUN	.	.400	.500	.100
1991 JUL	.150	.400	.300	.100
1991 AUG	.200	.400	.400	.200
1991 SEP	.	.700	.600	.500
1991 OCT	.	.500	.300	.100
1991 NOV	.	.400	.500	.200
1992 JAN	.	.600	.500	.600
1992 FEB	.	.500	.500	.300
1992 MAR	.	.500	.300	.200
1992 APR	.	.500	.500	.100
1992 JUN	.	.700	.600	.200
1992 JUL	.	.500	.400	.200
1992 SEP	.	.400	.400	.200
FLD PH (DMNSLESS)		DET'N LIMIT = N/A		GUIDELINE = 6.5-8.5 (A4)
1991 MAR	7.600	7.400	7.200	.
1991 APR	7.600	7.400	7.200	7.400
1991 MAY	7.500	7.400	7.500	7.400
1991 JUN	7.700	7.400	7.500	7.500
1991 JUL	7.700	7.500	7.500	7.600
1991 AUG	7.800	7.500	7.600	7.600
1991 SEP	7.700	7.600	7.600	7.500
1991 OCT	8.000	7.800	7.500	7.500
1991 NOV	7.700	7.500	7.500	7.600
1992 JAN	7.700	7.400	7.300	7.300
1992 FEB	7.700	7.400	7.400	7.400
1992 MAR	7.800	7.400	7.500	7.500
1992 APR	7.700	7.500	7.400	7.400
1992 JUN	7.800	7.500	7.700	7.500
1992 JUL	7.900	7.700	7.700	7.700
1992 SEP	7.900	7.400	7.400	7.400

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
CHEMISTRY (FIELD)				
FLD TEMPERATURE (DEG.C)			DET'N LIMIT = N/A	GUIDELINE = 15 (A3)
1991 MAR	2.000	3.000	8.000	.
1991 APR	6.000	7.000	8.000	10.000
1991 MAY	14.000	14.000	18.000	19.500
1991 JUN	16.500	18.000	20.000	20.000
1991 JUL	20.000	21.000	20.000	19.000
1991 AUG	21.000	21.900	21.500	22.000
1991 SEP	19.000	18.000	18.500	18.000
1991 OCT	13.800	13.500	16.000	17.500
1991 NOV	8.900	9.500	13.000	15.000
1992 JAN	1.500	3.000	4.000	5.500
1992 FEB	2.500	3.000	5.000	7.500
1992 MAR	1.100	2.500	3.000	5.000
1992 APR	4.100	4.500	4.500	6.200
1992 JUN	15.000	16.100	15.500	16.600
1992 JUL	18.000	18.100	18.000	17.900
1992 SEP	16.000	16.200	16.200	16.500
FLD TURBIDITY (FTU)			DET'N LIMIT = N/A	GUIDELINE = 1.0 (A1)
1991 MAR	.900	.900	.800	.
1991 APR	1.100	.700	.600	.500
1991 MAY	1.000	.200	.500	.300
1991 JUN	1.100	.100	.300	.400
1991 JUL	1.800	1.100	1.000	.800
1991 AUG	1.600	.500	.500	.500
1991 SEP	.900	.300	.400	.400
1991 OCT	.900	.200	.200	.300
1991 NOV	.900	.100	.400	.300
1992 JAN	1.100	.200	.300	.300
1992 FEB	.600	.100	.100	.200
1992 MAR	.600	.200	.400	.300
1992 APR	1.100	.500	.900	.500
1992 JUN	4.900	.400	.300	.360
1992 JUL	.600	.500	.300	.300
1992 SEP	.500	.100	.100	.200

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
CHEMISTRY (LABORATORY)				
ALKALINITY (MG/L)			DET'N LIMIT = 0.2	GUIDELINE = 30-500 (A4)
1991 MAR	107.300	104.700	105.000	.
1991 APR	105.200	97.500	99.000	98.900
1991 MAY	102.300	99.000	98.800	98.500
1991 JUN	101.200	97.200	96.100	97.700
1991 JUL	96.800	93.000	94.600	93.100
1991 AUG	95.200	92.600	91.700	92.300
1991 SEP	94.300	93.100	92.200	91.700
1991 OCT	96.200	93.500	94.200	94.000
1991 NOV	97.600	93.900	94.600	94.600
1992 JAN	96.900	87.900	89.100	89.500
1992 FEB	102.500	97.500	98.400	98.300
1992 MAR	102.200	99.700	98.900	98.900
1992 APR	98.600	91.600	91.400	93.900
1992 JUN	100.000	95.900	98.400	97.700
1992 JUL	96.700	95.200	95.400	95.400
1992 SEP	100.700	91.600	93.300	93.500
1992 NOV	104.800	99.400	100.200	103.300
CALCIUM (MG/L)			DET'N LIMIT = 0.20	GUIDELINE = 100 (F2)
1991 MAR	42.800	43.400	43.400	.
1991 APR	43.400	43.000	42.200	42.200
1991 MAY	39.600	39.200	41.000	40.800
1991 JUN	38.400	38.600	38.800	38.600
1991 JUL	39.000	38.600	!!S	37.800
1991 AUG	36.000	35.600	37.000	36.200
1991 SEP	37.500	38.200	38.400	37.900
1991 OCT	36.500	36.800	37.300	37.900
1991 NOV	37.600	38.000	38.000	38.000
1992 JAN	37.300	37.300	36.900	36.700
1992 FEB	39.600	39.500	39.500	39.700
1992 MAR	39.700	39.600	39.800	39.600
1992 APR	38.450	38.550	38.600	39.150
1992 JUN	38.700	39.500	38.600	38.500
1992 JUL	37.700	38.300	38.400	38.700
1992 SEP	36.900	37.150	38.500	38.000
1992 NOV	38.500	38.850	39.100	39.350
CYANIDE (MG/L)			DET'N LIMIT = 0.001	GUIDELINE = 0.2 (A1)
26 SAMPLES	BDL	BDL	.	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
CHEMISTRY (LABORATORY)				
CHLORIDE (MG/L)		DET'N LIMIT = 0.20		GUIDELINE = 250 (A3)
1991 MAR	17.500	17.400	17.600	.
1991 APR	14.500	15.300	20.500	16.600
1991 MAY	15.900	17.800	20.300	20.500
1991 JUN	21.700	22.800	22.900	22.900
1991 JUL	23.600	24.200	24.000	24.200
1991 AUG	23.200	22.800	24.500	24.500
1991 SEP	22.000	24.300	24.300	24.100
1991 OCT	22.500	23.300	23.400	23.400
1991 NOV	21.800	22.800	23.000	23.100
1992 JAN	22.900	23.900	24.000	23.900
1992 FEB	24.800	26.100	26.300	26.400
1992 MAR	23.600	24.100	24.600	24.300
1992 APR	17.800	19.200	19.100	19.900
1992 JUN	20.600	22.700	22.900	22.600
1992 JUL	20.700	23.200	23.200	23.300
1992 SEP	20.800	21.800	21.800	21.800
1992 NOV	18.200	20.000	19.800	19.800
COLOUR (HZU)		DET'N LIMIT = 0.50		GUIDELINE = 5 (A3)
1991 MAR	12.500	10.000	9.500	.
1991 APR	13.000	6.000	3.000	6.000
1991 MAY	10.500	5.000	3.000	3.500
1991 JUN	2.000	1.000 <T	1.000 <T	1.000
1991 JUL	1.000	.500 <T	.500 <T	.500 <T
1991 AUG	.500 <T	2.000	.500 <T	1.000 <T
1991 SEP	2.500	1.000	1.000 <T	1.000
1991 OCT	3.000	1.000 <T	1.000 <T	1.000 <T
1991 NOV	2.500	1.000 <T	1.000	1.000 <T
1992 JAN	3.000	1.000	.500 <T	1.000 <T
1992 FEB	2.500	1.000	1.000 <T	1.000 <T
1992 MAR	2.000	1.000 <T	1.000 <T	1.000
1992 APR	10.000	5.000	5.000	5.000
1992 JUN	3.000	1.000 <T	1.000	2.000
1992 JUL	3.000	BDL	.500 <T	.500 <T
1992 SEP	2.000	1.000 <T	1.000 <T	1.000 <T
1992 NOV	6.500	3.000	2.500	3.000

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
CHEMISTRY (LABORATORY)				
CONDUCTIVITY (UMHO/CM)			DET'N LIMIT = 1.0	GUIDELINE = 400 (F2)
1991 MAR	297	296	298	.
1991 APR	281	281	302	284
1991 MAY	275	280	294	295
1991 JUN	318	321	322	320
1991 JUL	307	308	307	308
1991 AUG	302	295	304	304
1991 SEP	308	318	316	315
1991 OCT	311	312	315	314
1991 NOV	309	310	312	312
1992 JAN	320	323	323	324
1992 FEB	334	338	341	341
1992 MAR	327	325	328	326
1992 APR	283	287	288	293
1992 JUN	306	320	315	311
1992 JUL	310	321	324	324
1992 SEP	307	310	312	311
1992 NOV	305	308	309	309
DISS ORG CARBON (MG/L)			DET'N LIMIT = 0.10	GUIDELINE = 5.0 (A3)
1991 MAR	4.000	4.100	4.200	.
1991 APR	4.000	4.000	2.800	3.500
1991 MAY	3.100	3.000	2.500	2.400
1991 JUN	1.700	1.800	1.800	1.800
1991 JUL	2.200	2.200	2.200	2.300
1991 AUG	2.100	2.600	2.100	2.200
1991 SEP	2.100	2.200	2.200	2.200
1991 OCT	2.300	1.800	1.500	2.200
1991 NOV	2.000	2.000	2.000	2.000
1992 JAN	1.800	1.500	1.500	1.600
1992 FEB	2.200	2.000	1.900	1.800
1992 MAR	2.200	2.100	2.000	2.100
1992 APR	4.100	3.500	3.500	3.200
1992 JUN	2.200	2.100	2.200	2.400
1992 JUL	2.100	2.200	2.100	2.100
1992 SEP	2.200	1.800	1.900	2.200
1992 NOV	3.000	2.500	2.700	2.700

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

CHEMISTRY (LABORATORY)

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
FLUORIDE (MG/L)			DET'N LIMIT = 0.01	GUIDELINE = 1.5 (A1)
1991 MAR	.100	.100	.100	.
1991 APR	.080	.080	.100	.080
1991 MAY	.100	.100	.120	.120
1991 JUN	.120	.120	.120	.120
1991 JUL	.120	.120	.120	.120
1991 AUG	.120	.120	.120	.120
1991 SEP	.120	.120	.120	.120
1991 OCT	.120	.120	.120	.140
1991 NOV	.120	.120	.120	.120
1992 JAN	.120	.080	.100	.100
1992 FEB	.120	.120	.120	.120
1992 MAR	.120	.120	.120	.120
1992 APR	.100	.080	.080	.060
1992 JUN	.100	.080	.080	.100
1992 JUL	.140	.160	.140	.140
1992 SEP	.120	.100	.100	.100
1992 NOV	.100	.120	.100	.100
HARDNESS (MG/L)			DET'N LIMIT = 0.5	GUIDELINE = 80-100 (A4)
1991 MAR	133.000	134.000	134.000	.
1991 APR	133.000	131.000	136.000	131.000
1991 MAY	124.100	124.400	133.000	133.000
1991 JUN	129.000	130.000	130.000	129.500
1991 JUL	133.000	131.000	IIS	129.000
1991 AUG	124.400	122.400	127.000	124.900
1991 SEP	127.900	129.800	130.400	128.800
1991 OCT	125.500	126.600	127.300	128.500
1991 NOV	129.700	129.000	129.500	130.700
1992 JAN	126.600	126.600	125.400	124.600
1992 FEB	134.000	134.000	134.000	134.000
1992 MAR	135.000	134.000	135.000	134.000
1992 APR	122.700	122.800	122.800	125.900
1992 JUN	130.000	132.000	129.000	129.000
1992 JUL	128.000	131.000	130.000	131.000
1992 SEP	126.000	126.500	129.470	128.010
1992 NOV	126.000	128.000	129.000	129.000

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

CHEMISTRY (LABORATORY)

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
IONCAL (DMNSLESS)			DET'N LIMIT = N/A	GUIDELINE = N/A
1991 MAR	1.465	2.210	1.762	.
1991 APR	4.235 NAF	3.082 NAF	3.262 NAF	2.978 NAF
1991 MAY	1.083 NAF	2.225 NAF	1.882 NAF	2.288 NAF
1991 JUN	2.743	2.614	3.332	4.125
1991 JUL	1.075	.524	.000 NAF	1.973
1991 AUG	1.108	1.408	.708	1.686
1991 SEP	.858	.789	.971	.065
1991 OCT	4.995	4.377	4.870	3.861
1991 NOV	2.545	.938	.158	.411
1992 JAN	3.572	2.919	5.014	5.054
1992 FEB	.050	.302	.700	.232
1992 MAR	.379 NAF	.786 NAF	.210 NAF	.118 NAF
1992 APR	2.438	2.603	1.779	2.649
1992 JUN	.137	1.279	1.689	1.492
1992 JUL	1.919 NAF	1.845 NAF	1.480 NAF	1.377 NAF
1992 SEP	2.230	.909	.172	.903
1992 NOV	3.762	1.783	1.928	3.261
POTASSIUM (MG/L)			DET'N LIMIT = 0.01	GUIDELINE = 10 (F2)
1991 MAR	1.500	1.450	1.450	.
1991 APR	1.550	1.450	1.500	1.550
1991 MAY	1.450	1.540	1.450	1.500
1991 JUN	1.600	1.650	1.650	1.650
1991 JUL	1.500	1.500	!!S	1.500
1991 AUG	1.430	1.340	1.420	1.320
1991 SEP	1.430	1.440	1.430	1.430
1991 OCT	1.530	1.520	1.530	1.530
1991 NOV	1.620	1.540	1.560	1.590
1992 JAN	1.540	1.600	1.540	1.550
1992 FEB	1.560	1.580	1.550	1.550
1992 MAR	1.560	1.630	1.600	1.520
1992 APR	1.559	1.604	1.579	1.450
1992 JUN	1.540	1.490	1.490	1.500
1992 JUL	1.790	1.470	1.450	1.480
1992 SEP	1.480	1.490	1.505	1.480
1992 NOV	1.448	1.458	1.450	1.447

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
CHEMISTRY (LABORATORY)				
LANGELIERS INDEX (OMNSLESS)			DET'N LIMIT = N/A	GUIDELINE = N/A
1991 MAR	.424	.340	.270	.
1991 APR	.468	.351	.331	.328
1991 MAY	.398	.268	.321	.347
1991 JUN	.496	.371	.348	.353
1991 JUL	.455	.313	.	.234
1991 AUG	.435	.301	.270	.273
1991 SEP	.436	.378	.346	.338
1991 OCT	.463	.284	.283	.329
1991 NOV	.372	.350	.313	.343
1992 JAN	.425	.292	.313	.333
1992 FEB	.564	.431	.484	.506
1992 MAR	.524 NAF	.443 NAF	.451 NAF	.449 NAF
1992 APR	.326	.144	.133	.229
1992 JUN	.506	.325	.357	.353
1992 JUL	.569 NAF	.378 NAF	.370	.374 NAF
1992 SEP	.378	.230	.233	.258
1992 NOV	.405	.245	.241	.267
MAGNESIUM (MG/L)			DET'N LIMIT = 0.1	GUIDELINE = 30.0 (F2)
1991 MAR	6.500	6.200	6.300	.
1991 APR	6.000	5.700	7.500	6.100
1991 MAY	6.150	6.400	7.300	7.500
1991 JUN	8.200	8.200	8.100	8.000
1991 JUL	8.600	8.300	IIS	8.400
1991 AUG	8.350	8.150	8.400	8.350
1991 SEP	8.350	8.350	8.400	8.300
1991 OCT	8.350	8.400	8.300	8.200
1991 NOV	8.650	8.300	8.400	8.700
1992 JAN	8.100	8.160	8.050	8.050
1992 FEB	8.540	8.500	8.490	8.560
1992 MAR	8.590	8.510	8.630	8.600
1992 APR	6.480	6.460	6.410	6.840
1992 JUN	8.160	8.080	7.920	7.850
1992 JUL	8.250	8.560	8.300	8.270
1992 SEP	8.220	8.190	8.100	8.060
1992 NOV	7.240	7.600	7.560	7.500

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
CHEMISTRY (LABORATORY)				
SODIUM (MG/L)			DET'N LIMIT = 0.20	GUIDELINE = 200 (A4)
1991 MAR	9.400	9.000	8.800	.
1991 APR	7.800	7.400	10.200	8.200
1991 MAY	8.100	8.300	10.200	10.400
1991 JUN	11.200	11.200	11.000	10.800
1991 JUL	11.600	11.200	!!S	11.000
1991 AUG	12.800	12.100	13.000	12.900
1991 SEP	11.800	12.600	12.300	12.100
1991 OCT	11.900	11.900	11.900	12.000
1991 NOV	11.700	11.200	11.500	11.400
1992 JAN	11.300	11.400	11.300	11.300
1992 FEB	13.900	14.200	14.000	14.100
1992 MAR	13.000	12.900	13.100	13.000
1992 APR	9.390	9.400	9.410	9.650
1992 JUN	11.500	12.300	12.300	12.200
1992 JUL	12.000	13.200	13.200	13.300
1992 SEP	11.870	11.690	11.620	11.780
1992 NOV	10.140	10.580	10.510	10.600
AMMONIUM TOTAL (MG/L)			DET'N LIMIT = 0.002	GUIDELINE = 0.05 (F2)
1991 MAR	BDL	.002 <T	.004 <T	.
1991 APR	BDL	.004 <T	.004 <T	.008 <T
1991 MAY	.012	.002 <T	.006 <T	.010
1991 JUN	.002 <T	BDL	BDL	BDL
1991 JUL	.024	BDL	BDL	.002 <T
1991 AUG	BDL	.008 <T	BDL	BDL
1991 SEP	.020	BDL	BDL	BDL
1991 OCT	.004 <T	BDL	BDL	.002 <T
1991 NOV	.004 <T	BDL	BDL	.002 <T
1992 JAN	BDL	.004 <T	.014	.002 <T
1992 FEB	.006 <T	.006 <T	.004 <T	.006 <T
1992 MAR	.006 <T	.004 <T	.006 <T	.006 <T
1992 APR	.004 <T	BDL	BDL	.004 <T
1992 JUN	.016	BDL	BDL	.004 <T
1992 JUL	.032	.006 <T	.006 <T	.004 <T
1992 SEP	.022	.004 <T	.002 <T	.004 <T
1992 NOV	BDL	.008 <T	.006 <T	.010

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
CHEMISTRY (LABORATORY)				
NITRITE (MG/L)			DET'N LIMIT = 0.001	GUIDELINE = 1.0 (A1)
1991 MAR	.002 <T	.001 <T	.001 <T	.
1991 APR	.001 <T	BDL	BDL	BDL
1991 MAY	.002 <T	.002 <T	BDL	.001 <T
1991 JUN	.001 <T	.001 <T	.001 <T	.001 <T
1991 JUL	.001 <T	BDL	BDL	.001 <T
1991 AUG	.001 <T	.001 <T	.001 <T	.001 <T
1991 SEP	.004 <T	BDL	BDL	BDL
1991 OCT	.003 <T	.001 <T	.001 <T	.001 <T
1991 NOV	.009	BDL	BDL	.001 <T
1992 JAN	.002 <T	.001 <T	.001 <T	.001 <T
1992 FEB	.002 <T	.001 <T	BDL	BDL
1992 MAR	.003 <T	.002 <T	.002 <T	.001 <T
1992 APR	.029	.003 <T	.002 <T	.002 <T
1992 JUN	.008	.001 <T	.001 <T	.002 <T
1992 JUL	.004 <T	.001 <T	.001 <T	.001 <T
1992 SEP	.007	.003 <T	.002 <T	.003 <T
1992 NOV	.003 <T	.002 <T	.002 <T	.002 <T
NITRATE (TOTAL) (MG/L)			DET'N LIMIT = 0.005	GUIDELINE = 10.0 (A1)
1991 MAR	.380	.390	.395	.
1991 APR	.370	.370	.350	.375
1991 MAY	.240	.255	.280	.290
1991 JUN	.245	.265	.250	.255
1991 JUL	.140	.140	.135	.130
1991 AUG	.025	.105	.110	.115
1991 SEP	.100	.105	.080	.085
1991 OCT	.105	.135	.135	.135
1991 NOV	.195	.190	.190	.195
1992 JAN	.270	.275	.330	.275
1992 FEB	.270	.275	.275	.270
1992 MAR	.320	.320	.320	.320
1992 APR	.440	.420	.420	.415
1992 JUN	.280	.270	.270	.270
1992 JUL	.185	.150	.155	.160
1992 SEP	.160	.170	.165	.170
1992 NOV	.190	.210	.210	.215

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
CHEMISTRY (LABORATORY)				
NITROGEN TOT KJELD (MG/L)			DET'N LIMIT = 0.02	GUIDELINE = N/A
1991 MAR	.330	.310	.300	.
1991 APR	.310	.250	.220	.270
1991 MAY	.280	.250	.230	.250
1991 JUN	.220	.200	.170	.190
1991 JUL	.300	.240	!!S	.270
1991 AUG	.300	.250	.210	.250
1991 SEP	.260	.200	.210	.230
1991 OCT	.290	.190	.190	.190
1991 NOV	.250	.190	.230	.200
1992 JAN	.280	.170	.190	.210
1992 FEB	.240	.200	.200	.200
1992 MAR	.200	.180	.160	.180
1992 APR	.340	.290	.290	.270
1992 JUN	.280	.180	.200	.220
1992 JUL	.330	.240	.220	.230
1992 SEP	.260	.210	.210	.220
1992 NOV	.320	.240	.230	.240
PH (DMNSLESS)			DET'N LIMIT = N/A	GUIDELINE = 6.5-8.5 (A4)
1991 MAR	8.200	8.120	8.050	.
1991 APR	8.240	8.160	8.150	8.140
1991 MAY	8.220	8.110	8.150	8.180
1991 JUN	8.350	8.240	8.220	8.220
1991 JUL	8.320	8.200	8.270	8.130
1991 AUG	8.340	8.220	8.180	8.190
1991 SEP	8.330	8.270	8.240	8.240
1991 OCT	8.360	8.190	8.180	8.220
1991 NOV	8.250	8.240	8.200	8.230
1992 JAN	8.310	8.220	8.240	8.260
1992 FEB	8.400	8.290	8.340	8.360
1992 MAR	8.360	8.290	8.300	8.300
1992 APR	8.180	8.030	8.020	8.100
1992 JUN	8.360	8.190	8.220	8.220
1992 JUL	8.450	8.260	8.250	8.250
1992 SEP	8.250	8.140	8.120	8.150
1992 NOV	8.240	8.100	8.090	8.100

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
CHEMISTRY (LABORATORY)				
PHOSPHORUS FIL REACT (MG/L)		DET'N LIMIT = 0.0005		GUIDELINE = N/A
1991 MAR	.000 <T	.001 <T	.	.
1991 APR	.000 <T	.001 <T	.	.
1991 MAY	.000 <T	.000 <T	.	.
1991 JUN	BDL	BDL	.	.
1991 JUL	.000 <T	BDL	.	.
1991 AUG	.001 <T	.000 <T	.	.
1991 SEP	BDL	BDL	.	.
1991 OCT	BDL	BDL	.	.
1991 NOV	.001 <T	BDL	.	.
1992 JAN	.000 <T	.000 <T	.	.
1992 FEB	BDL	BDL	.	.
1992 MAR	BDL	.001 <T	.	.
1992 APR	BDL	BDL	.	.
1992 JUN	BDL	BDL	.	.
1992 JUL	.001 <T	.001 <T	.	.
1992 SEP	BDL	BDL	.	.
1992 NOV	BDL	BDL	.	.
PHOSPHORUS TOTAL (MG/L)		DET'N LIMIT = 0.002		GUIDELINE = 0.40 (F2)
1991 MAR	.017	.015	.	.
1991 APR	.011	.005 <T	.	.
1991 MAY	.008 <T	.006 <T	.	.
1991 JUN	.011	.003 <T	.	.
1991 JUL	.016	.009 <T	.	.
1991 AUG	.009 <T	.005 <T	.	.
1991 SEP	.006 <T	.004 <T	.	.
1991 OCT	.012	.003 <T	.	.
1991 NOV	.011	.003 <T	.	.
1992 JAN	.010	.002 <T	.	.
1992 FEB	.006 <T	.004 <T	.	.
1992 MAR	.012	.012	.	.
1992 APR	.017	.004 <T	.	.
1992 JUN	.021	.002 <T	.	.
1992 JUL	.012	.007 <T	.	.
1992 SEP	.014	.004 <T	.	.
1992 NOV	.011	.006 <T	.	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
CHEMISTRY (LABORATORY)				
RESIDUE FILTRATE (MG/L)			DET'N LIMIT = N/A	GUIDELINE = 500 (A3)
1991 MAR	193.000 CRO	192.000 CRO	194.000 CRO	.
1991 APR	183.000 CRO	183.000 CRO	196.000 CRO	185.000 CRO
1991 MAY	179.000 CRO	182.000 CRO	191.000 CRO	192.000 CRO
1991 JUN	207.000 CRO	209.000 CRO	209.000 CRO	208.000 CRO
1991 JUL	200.000 CRO	200.000 CRO	200.000 CRO	200.000 CRO
1991 AUG	196.000 CRO	192.000 CRO	198.000 CRO	198.000 CRO
1991 SEP	200.000 CRO	207.000 CRO	205.000 CRO	205.000 CRO
1991 OCT	202.000 CRO	203.000 CRO	205.000 CRO	204.000 CRO
1991 NOV	201.000 CRO	202.000 CRO	203.000 CRO	203.000 CRO
1992 JAN	208.000 CRO	210.000 CRO	210.000 CRO	211.000 CRO
1992 FEB	217.000 CRO	220.000 CRO	222.000 CRO	222.000 CRO
1992 MAR	213.000 CRO	211.000 CRO	213.000 CRO	212.000 CRO
1992 APR	184.000 CRO	187.000 CRO	187.000 CRO	190.000 CRO
1992 JUN	199.000 CRO	208.000 CRO	205.000 CRO	202.000 CRO
1992 JUL	202.000 CRO	209.000 CRO	211.000 CRO	211.000 CRO
1992 SEP	200.000 CRO	202.000 CRO	203.000 CRO	202.000 CRO
1992 NOV	198.000 CRO	200.000 CRO	201.000 CRO	201.000 CRO
SULPHATE (MG/L)			DET'N LIMIT = 0.20	GUIDELINE = 500 (A3)
1991 MAR	19.520	20.430	20.490	.
1991 APR	18.040	22.930	25.030	21.380
1991 MAY	18.830	21.500	24.100	24.280
1991 JUN	26.450	29.110	30.820	29.110
1991 JUL	26.530	28.750	IIS	28.910
1991 AUG	26.430	26.320	28.070	28.590
1991 SEP	27.330	28.730	29.450	29.740
1991 OCT	31.310	32.770	33.550	33.540
1991 NOV	23.050	26.040	27.300	27.780
1992 JAN	27.110	33.740	33.870	33.330
1992 FEB	26.700	29.440	29.390	29.590
1992 MAR	27.530	29.220	29.080	29.100
1992 APR	22.380	27.750	26.840	28.040
1992 JUN	26.230	32.310	27.430	27.500
1992 JUL	25.890	28.820	28.360	29.190
1992 SEP	25.450	30.920	30.970	30.800
1992 NOV	23.290	26.420	26.420	25.970

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

CHEMISTRY (LABORATORY)

TURBIDITY (FTU)	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
			DET'N LIMIT = 0.05	GUIDELINE = 1.0 (A1)
1991 MAR	1.350	.820	.740	.
1991 APR	1.200	.520	.460	.550
1991 MAY	.860	.670	.860	.720
1991 JUN	1.400	.220	.320	.420
1991 JUL	1.790	1.290 RRV	.380	.400
1991 AUG	1.300	.590	.540	.500
1991 SEP	.900	.360	.490	.420
1991 OCT	.790	.280	.270	.400
1991 NOV	.470	.330	.320	.930
1992 JAN	1.050	.220 <T	.230 <T	.230 <T
1992 FEB	.440	.180 <T	.120 <T	.090 <T
1992 MAR	.510	.220 <T	.200 <T	.160 <T
1992 APR	1.570	.910	.720	.460
1992 JUN	1.100	.290	.350	.360
1992 JUL	1.590	.570	.580	.590
1992 SEP	1.010	.370	.380	.600
1992 NOV	1.640	.670	.510	.490

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
METALS				
SILVER (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = N/A
67 SAMPLES	BDL	BDL	BDL	BDL
ALUMINUM (UG/L)			DET'N LIMIT = 0.10	GUIDELINE = 100 (A4)
1991 MAR	16.000	310.000	300.000	.
1991 APR	16.000	330.000	130.000	160.000
1991 MAY	11.000	320.000	250.000	210.000
1991 JUN	20.000	260.000	270.000	250.000
1991 JUL	7.300	360.000	370.000	330.000
1991 AUG	14.000	390.000	360.000	310.000
1991 SEP	4.200	260.000	270.000	260.000
1991 OCT	18.000	180.000	150.000	110.000
1991 NOV	11.000	140.000	160.000	130.000
1992 JAN	9.800	32.000	41.000	43.000
1992 FEB	6.200	77.000	79.000	81.000
1992 MAR	3.700	180.000	170.000	140.000
1992 APR	17.000	450.000	410.000	420.000
1992 JUN	1.100	240.000	280.000	310.000
1992 JUL	5.600	560.000	520.000	540.000
1992 SEP	7.300	120.000	130.000	140.000
1992 NOV	22.000	160.000	160.000	71.000
ARSENIC (UG/L)			DET'N LIMIT = 0.10	GUIDELINE = 25 (A1)
1991 MAR	.530 <T	.510 <T	.490 <T	.
1991 APR	.600 <T	.430 <T	.380 <T	.370 <T
1991 MAY	BDL	BDL	BDL	BDL
1991 JUN	.800 <T	.510 <T	.570 <T	.510 <T
1991 JUL	.790 <T	.850 <T	.720 <T	.640 <T
1991 AUG	.950 <T	.960 <T	.880 <T	.990 <T
1991 SEP	.790 <T	.750 <T	.770 <T	.800 <T
1991 OCT	1.100	.740 <T	.430 <T	.570 <T
1991 NOV	.820 <T	.810 <T	.640 <T	.520 <T
1992 JAN	.880 <T	.390 <T	.380 <T	.440 <T
1992 FEB	.820 <T	.510 <T	.510 <T	.580 <T
1992 MAR	.960 <T	.780 <T	.850 <T	.730 <T
1992 APR	.910 <T	.800 <T	.720 <T	.650 <T
1992 JUN	.880 <T	.700 <T	1.100	.520 <T
1992 JUL	.580 <T	.680 <T	.790 <T	.610 <T
1992 SEP	1.100	.470 <T	.270 <T	.370 <T
1992 NOV	.970 <T	.630 <T	.500 <T	.890 <T

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
METALS				
BARIUM (UG/L)		DET'N LIMIT = 0.05		GUIDELINE = 1000 (A2)
1991 MAR	31.000	31.000	30.000	.
1991 APR	31.000	31.000	28.000	31.000
1991 MAY	29.000	28.000	27.000	28.000
1991 JUN	23.000	22.000	23.000	23.000
1991 JUL	21.000	21.000	22.000	22.000
1991 AUG	23.000	23.000	23.000	21.000
1991 SEP	23.000	25.000	24.000	24.000
1991 OCT	22.000	21.000	22.000	17.000
1991 NOV	26.000	23.000	26.000	24.000
1992 JAN	24.000	23.000	22.000	23.000
1992 FEB	24.000	24.000	24.000	25.000
1992 MAR	27.000	27.000	27.000	27.000
1992 APR	28.000	29.000	28.000	28.000
1992 JUN	24.000	28.000	25.000	26.000
1992 JUL	24.000	23.000	24.000	24.000
1992 SEP	27.000	27.000	30.000	29.000
1992 NOV	28.000	27.000	27.000	28.000
BORON (UG/L)		DET'N LIMIT = 2.00		GUIDELINE = 5000 (A1)
1991 MAR	18.000 <T	17.000 <T	17.000 <T	.
1991 APR	22.000	21.000	25.000	23.000
1991 MAY	17.000 <T	16.000 <T	18.000 <T	17.000 <T
1991 JUN	21.000	21.000	22.000	18.000 <T
1991 JUL	21.000	22.000	21.000	22.000
1991 AUG	28.000	31.000	29.000	28.000
1991 SEP	25.000	27.000	27.000	27.000
1991 OCT	35.000	34.000	35.000	34.000
1991 NOV	30.000	28.000	29.000	28.000
1992 JAN	25.000	26.000	23.000	24.000
1992 FEB	25.000	26.000	26.000	26.000
1992 MAR	25.000	25.000	33.000	34.000
1992 APR	18.000 <T	19.000 <T	18.000 <T	19.000 <T
1992 JUN	39.000	27.000	28.000	24.000
1992 JUL	24.000	26.000	25.000	25.000
1992 SEP	26.000	26.000	27.000	26.000
1992 NOV	23.000	25.000	25.000	34.000

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
METALS				
BERYLLIUM (UG/L)		DET'N LIMIT = 0.05		GUIDELINE = 6800 (D4)
1991 MAR	BDL	BDL	BDL	.
1991 APR	BDL	BDL	BDL	BDL
1991 MAY	BDL	BDL	BDL	BDL
1991 JUN	BDL	BDL	BDL	BDL
1991 JUL	BDL	BDL	BDL	BDL
1991 AUG	BDL	.070 <T	BDL	BDL
1991 SEP	BDL	BDL	BDL	.060 <T
1991 OCT	BDL	BDL	BDL	BDL
1991 NOV	BDL	BDL	BDL	BDL
1992 JAN	BDL	BDL	BDL	BDL
1992 FEB	BDL	BDL	BDL	BDL
1992 MAR	BDL	BDL	BDL	BDL
1992 APR	BDL	BDL	BDL	BDL
1992 JUN	BDL	.070 <T	BDL	BDL
1992 JUL	BDL	BDL	BDL	BDL
1992 SEP	.110 <T	BDL	BDL	BDL
1992 NOV	BDL	BDL	BDL	BDL
CADMIUM (UG/L)		DET'N LIMIT = 0.05		GUIDELINE = 5.0 (A1)
1991 MAR	BDL	BDL	BDL	.
1991 APR	BDL	BDL	BDL	BDL
1991 MAY	BDL	BDL	BDL	BDL
1991 JUN	BDL	BDL	BDL	BDL
1991 JUL	BDL	BDL	BDL	BDL
1991 AUG	BDL	BDL	BDL	BDL
1991 SEP	BDL	BDL	BDL	BDL
1991 OCT	BDL	BDL	BDL	BDL
1991 NOV	.190 <T	BDL	.070 <T	.100 <T
1992 JAN	BDL	BDL	BDL	BDL
1992 FEB	BDL	BDL	BDL	BDL
1992 MAR	BDL	BDL	BDL	BDL
1992 APR	.070 <T	BDL	BDL	.230 <T
1992 JUN	BDL	BDL	BDL	BDL
1992 JUL	BDL	BDL	BDL	BDL
1992 SEP	BDL	BDL	BDL	BDL
1992 NOV	BDL	BDL	BDL	BDL

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
METALS				
COBALT (UG/L)		DET'N LIMIT = 0.02		GUIDELINE = N/A
1991 MAR	.100 <T	.060 <T	.050 <T	.
1991 APR	.130 <T	.100 <T	.070 <T	.070 <T
1991 MAY	.130 <T	.110 <T	.030 <T	.040 <T
1991 JUN	.170 <T	.170 <T	.220 <T	.170 <T
1991 JUL	.080 <T	.120 <T	.070 <T	.050 <T
1991 AUG	.100 <T	.090 <T	.070 <T	.300 <T
1991 SEP	.100 <T	.140 <T	.090 <T	.120 <T
1991 OCT	.120 <T	.050 <T	.110 <T	.330 <T
1991 NOV	BDL	BDL	BDL	BDL
1992 JAN	.120 <T	.120 <T	.120 <T	.130 <T
1992 FEB	.210 <T	.210 <T	.230 <T	.210 <T
1992 MAR	.120 <T	.180 <T	.250 <T	.280 <T
1992 APR	.190 <T	.200 <T	.120 <T	.140 <T
1992 JUN	.150 <T	.300 <T	.290 <T	.280 <T
1992 JUL	.290 <T	.230 <T	.290 <T	.250 <T
1992 SEP	.230 <T	.210 <T	.200 <T	.200 <T
1992 NOV	BDL	BDL	BDL	BDL
CHROMIUM (UG/L)		DET'N LIMIT = 0.50		GUIDELINE = 50.0 (A1)
1991 MAR	2.000 <T	2.100 <T	2.200 <T	.
1991 APR	2.900 <T	2.900 <T	2.500 <T	2.900 <T
1991 MAY	1.000 <T	.800 <T	5.300	.840 <T
1991 JUN	1.500 <T	1.000 <T	.530 <T	.570 <T
1991 JUL	BDL	BDL	BDL	BDL
1991 AUG	1.700 <T	1.600 <T	1.600 <T	1.500 <T
1991 SEP	1.700 <T	1.700 <T	1.600 <T	1.700 <T
1991 OCT	3.500 <T	3.300 <T	3.400 <T	3.500 <T
1991 NOV	1.300 <T	1.300 <T	1.100 <T	1.100 <T
1992 JAN	.560 <T	.700 <T	.780 <T	.750 <T
1992 FEB	.510 <T	.520 <T	BDL	BDL
1992 MAR	BDL	BDL	2.400 <T	2.200 <T
1992 APR	BDL	BDL	BDL	BDL
1992 JUN	3.600 <T	.650 <T	1.600 <T	.510 <T
1992 JUL	BDL	.540 <T	.530 <T	.550 <T
1992 SEP	3.700 <T	2.300 <T	2.100 <T	2.200 <T
1992 NOV	1.300 <T	1.400 <T	.810 <T	6.000

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
METALS				
COPPER (UG/L)		DET'N LIMIT = 0.50		GUIDELINE = 1000 (A3)
1991 MAR	1.100 <T	1.300 <T	11.000	.
1991 APR	1.100 <T	1.100 <T	2.600 <T	30.000
1991 MAY	1.500 <T	1.800 <T	4.400 <T	13.000
1991 JUN	1.300 <T	1.100 <T	2.800 <T	17.000
1991 JUL	1.500 <T	1.300 <T	2.300 <T	24.000
1991 AUG	1.500 <T	1.600 <T	2.500 <T	32.000
1991 SEP	3.300 <T	1.500 <T	2.200 <T	2.600 <T
1991 OCT	1.400 <T	1.100 <T	2.300 <T	54.000
1991 NOV	1.100 <T	.860 <T	1.800 <T	24.000
1992 JAN	1.100 <T	1.000 <T	2.300 <T	2.800 <T
1992 FEB	1.200 <T	1.100 <T	1.900 <T	10.000
1992 MAR	1.700 <T	1.500 <T	2.800 <T	40.000
1992 APR	1.500 <T	1.300 <T	2.700 <T	62.000
1992 JUN	1.300 <T	1.200 <T	1.900 <T	3.600 <T
1992 JUL	1.800 <T	1.600 <T	2.000 <T	2.900 <T
1992 SEP	1.400 <T	1.200 <T	2.800 <T	3.500 <T
1992 NOV	1.300 <T	1.100 <T	2.800 <T	2.300 <T
IRON (UG/L)		DET'N LIMIT = 6.00		GUIDELINE = 300 (A3)
1991 MAR	31.000 <T	25.000 <T	27.000 <T	.
1991 APR	29.000 <T	8.100 <T	12.000 <T	13.000 <T
1991 MAY	24.000 <T	17.000 <T	32.000 <T	11.000 <T
1991 JUN	26.000 <T	BDL	10.000 <T	BDL
1991 JUL	BDL	BDL	BDL	BDL
1991 AUG	20.000 <T	15.000 <T	BDL	BDL
1991 SEP	BDL	14.000 <T	BDL	BDL
1991 OCT	27.000 <T	BDL	BDL	BDL
1991 NOV	11.000 <T	6.500 <T	BDL	BDL
1992 JAN	18.000 <T	8.200 <T	8.300 <T	8.700 <T
1992 FEB	9.500 <T	BDL	8.400 <T	BDL
1992 MAR	7.400 <T	BDL	7.400 <T	6.600 <T
1992 APR	30.000 <T	26.000 <T	9.500 <T	11.000 <T
1992 JUN	BDL	BDL	7.600 <T	BDL
1992 JUL	6.900 <T	6.900 <T	BDL	BDL
1992 SEP	11.000 <T	10.000 <T	BDL	7.600 <T
1992 NOV	26.000 <T	9.500 <T	8.100 <T	BDL
MERCURY (UG/L)		DET'N LIMIT = 0.02		GUIDELINE = 1.0 (A1)
34 SAMPLES	BDL	BDL	.	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
METALS				
MANGANESE (UG/L)		DET'N LIMIT = 0.05		GUIDELINE = 50.0 (A3)
1991 MAR	3.100	1.800	1.800	.
1991 APR	4.000	1.100	1.300	2.100
1991 MAY	4.100	2.100	2.800	1.500
1991 JUN	7.900	1.200	1.800	1.000
1991 JUL	5.800	3.300	2.700	2.800
1991 AUG	9.400	2.300	1.700	2.300
1991 SEP	4.000	.940	.880	.930
1991 OCT	24.000	.680	.530	.650
1991 NOV	4.800	.780	.820	.630
1992 JAN	2.300	.230 <T	.260 <T	.290 <T
1992 FEB	1.400	.410 <T	.510	.400 <T
1992 MAR	1.300	.820	.750	.850
1992 APR	4.600	1.700	1.600	1.800
1992 JUN	.420 <T	1.500	1.600	2.100
1992 JUL	2.900	2.200	1.200	1.400
1992 SEP	5.500	.870	.860	.890
1992 NOV	4.000	.870	.830	.430 <T
MOLYBDENUM (UG/L)		DET'N LIMIT = 0.05		GUIDELINE = N/A
1991 MAR	.620	.600	.580	.
1991 APR	.520	.500 <T	.840	.680
1991 MAY	.630	.640	.950	.880
1991 JUN	1.000	1.200	1.000	1.100
1991 JUL	.990	1.100	1.100	1.000
1991 AUG	.940	1.000	1.100	1.000
1991 SEP	.890	.950	.940	1.000
1991 OCT	1.000	1.200	1.200	1.200
1991 NOV	1.200	1.200	1.300	1.300
1992 JAN	1.000	1.100	1.000	1.000
1992 FEB	1.100	1.100	1.100	1.100
1992 MAR	1.200	1.200	1.200	1.300
1992 APR	.670	.750	.730	.680
1992 JUN	1.200	.970	.960	1.200
1992 JUL	.940	.980	1.100	1.200
1992 SEP	1.300	1.100	1.200	1.200
1992 NOV	.770	.860	.850	1.200

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
METALS				
NICKEL (UG/L)		DET'N LIMIT = 0.20		GUIDELINE = 350 (03)
1991 MAR	.270 <T	BDL	BDL	.
1991 APR	1.500 <T	1.100 <T	1.300 <T	.960 <T
1991 MAY	BDL	BDL	1.300 <T	BDL
1991 JUN	1.100 <T	1.300 <T	1.100 <T	.770 <T
1991 JUL	BDL	BDL	BDL	BDL
1991 AUG	1.300 <T	1.100 <T	1.100 <T	3.000
1991 SEP	1.300 <T	1.100 <T	1.100 <T	1.100 <T
1991 OCT	1.100 <T	.950 <T	.960 <T	2.800
1991 NOV	BDL	BDL	BDL	2.900
1992 JAN	.990 <T	.790 <T	1.100 <T	.990 <T
1992 FEB	2.400	2.700	2.400	2.600
1992 MAR	1.600 <T	1.800 <T	2.000 <T	2.600
1992 APR	2.000 <T	1.300 <T	1.100 <T	1.800 <T
1992 JUN	1.700 <T	2.100	1.400 <T	2.300
1992 JUL	.230 <T	BDL	BDL	BDL
1992 SEP	BDL	BDL	BDL	BDL
1992 NOV	BDL	BDL	BDL	BDL
LEAD (UG/L)		DET'N LIMIT = 0.05		GUIDELINE = 10 (A1)
1991 MAR	.100 <T	.120 <T	.290 <T	.
1991 APR	.180 <T	.100 <T	.150 <T	.790
1991 MAY	.170 <T	.170 <T	.410 <T	.810
1991 JUN	.180 <T	.080 <T	.420 <T	.820
1991 JUL	.070 <T	.080 <T	.350 <T	1.400
1991 AUG	.120 <T	.150 <T	.250 <T	3.200
1991 SEP	.150 <T	.520	.210 <T	.300 <T
1991 OCT	.240 <T	.090 <T	.240 <T	4.100
1991 NOV	.170 <T	.070 <T	.200 <T	1.300
1992 JAN	.110 <T	.060 <T	.100 <T	.130 <T
1992 FEB	.060 <T	BDL	.080 <T	.360 <T
1992 MAR	.120 <T	.170 <T	.310 <T	2.500
1992 APR	.140 <T	.080 <T	.130 <T	3.600
1992 JUN	BDL	.100 <T	.160 <T	.260 <T
1992 JUL	.080 <T	BDL	.090 <T	.210 <T
1992 SEP	.110 <T	.060 <T	.190 <T	.270 <T
1992 NOV	.090 <T	BDL	.160 <T	.120 <T

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
METALS				
ANTIMONY (UG/L)		DET'N LIMIT = 0.05		GUIDELINE = 146 (D4)
1991 MAR	.510	.610	.500 <T	.
1991 APR	.620	.550	.490 <T	.610
1991 MAY	.750	.790	.610	.650
1991 JUN	.770	.830	.640	.700
1991 JUL	.650	.580	.690	.650
1991 AUG	.630	.680	.670	.810
1991 SEP	.590	.560	.560	.590
1991 OCT	.580	.460 <T	.550	.650
1991 NOV	.950	.780	.690	.780
1992 JAN	.710	.520	.530	.540
1992 FEB	.900	.690	.630	.740
1992 MAR	.710	.500 <T	.800	1.100
1992 APR	.420 <T	.450 <T	.430 <T	.490 <T
1992 JUN	.310 <T	.440 <T	.420 <T	.610
1992 JUL	.430 <T	.420 <T	.560	.650
1992 SEP	.710	.570	.700	.890
1992 NOV	.740	.710	.840	.740
SELENIUM (UG/L)		DET'N LIMIT = 1.00		GUIDELINE = 10 (A1)
1991 MAR	BDL	BDL	BDL	.
1991 APR	BDL	BDL	1.100 <T	1.200 <T
1991 MAY	BDL	BDL	1.200 <T	BDL
1991 JUN	1.300 <T	BDL	BDL	1.200 <T
1991 JUL	BDL	BDL	BDL	BDL
1991 AUG	BDL	1.300 <T	BDL	1.200 <T
1991 SEP	BDL	BDL	BDL	BDL
1991 OCT	BDL	1.300 <T	1.200 <T	1.400 <T
1991 NOV	BDL	BDL	2.600 <T	1.600 <T
1992 JAN	BDL	BDL	BDL	BDL
1992 FEB	BDL	BDL	BDL	BDL
1992 MAR	BDL	BDL	BDL	BDL
1992 APR	BDL	BDL	BDL	BDL
1992 JUN	BDL	1.100 <T	BDL	1.300 <T
1992 JUL	BDL	BDL	1.100 <T	1.100 <T
1992 SEP	2.500 <T	1.300 <T	1.800 <T	1.700 <T
1992 NOV	BDL	BDL	BDL	1.300 <T

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
METALS				
STRONTIUM (UG/L)		DET'N LIMIT = 0.10		GUIDELINE = N/A
1991 MAR	210.000	210.000	200.000	.
1991 APR	190.000	180.000	190.000	190.000
1991 MAY	190.000	190.000	190.000	200.000
1991 JUN	180.000	190.000	190.000	190.000
1991 JUL	170.000	170.000	170.000	170.000
1991 AUG	180.000	190.000	180.000	180.000
1991 SEP	180.000	190.000	180.000	180.000
1991 OCT	170.000	170.000	170.000	170.000
1991 NOV	200.000	190.000	210.000	210.000
1992 JAN	190.000	190.000	200.000	190.000
1992 FEB	200.000	200.000	200.000	200.000
1992 MAR	200.000	200.000	200.000	210.000
1992 APR	190.000	200.000	190.000	200.000
1992 JUN	200.000	220.000	190.000	210.000
1992 JUL	190.000	200.000	200.000	200.000
1992 SEP	220.000	210.000	210.000	220.000
1992 NOV	190.000	190.000	190.000	190.000
TITANIUM (UG/L)		DET'N LIMIT = 0.50		GUIDELINE = N/A
1991 MAR	4.600 <T	4.300 <T	5.200	.
1991 APR	6.300	5.700	4.400 <T	5.700
1991 MAY	3.100 <T	2.400 <T	1.800 <T	2.400 <T
1991 JUN	2.600 <T	1.500 <T	1.400 <T	1.600 <T
1991 JUL	1.100 <T	.940 <T	1.000 <T	.880 <T
1991 AUG	2.000 <T	1.200 <T	1.200 <T	1.100 <T
1991 SEP	.590 <T	.510 <T	BDL	.520 <T
1991 OCT	1.800 <T	1.100 <T	.910 <T	1.000 <T
1991 NOV	2.800 <T	1.700 <T	1.700 <T	1.600 <T
1992 JAN	1.200 <T	.840 <T	.800 <T	.950 <T
1992 FEB	.930 <T	.980 <T	.720 <T	.920 <T
1992 MAR	3.700 <T	4.100 <T	4.100 <T	4.900 <T
1992 APR	6.500	5.600	6.100	6.100
1992 JUN	3.900 <T	4.200 <T	3.400 <T	4.000 <T
1992 JUL	5.100	5.600	5.900	6.000
1992 SEP	1.400 <T	1.100 <T	.800 <T	.890 <T
1992 NOV	2.400 <T	.980 <T	1.000 <T	1.000 <T
THALLIUM (UG/L)		DET'N LIMIT = 0.05		GUIDELINE = 13 (D4)
67 SAMPLES	BDL	BDL	BDL	BDL

TABLE 4
ORINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
METALS				
URANIUM (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 100 (A1)
1991 MAR	.210 <T	.330 <T	.330 <T	.
1991 APR	.250 <T	.280 <T	.330 <T	.290 <T
1991 MAY	.220 <T	.290 <T	.300 <T	.280 <T
1991 JUN	.310 <T	.320 <T	.310 <T	.340 <T
1991 JUL	.320 <T	.330 <T	.320 <T	.340 <T
1991 AUG	.330 <T	.340 <T	.330 <T	.320 <T
1991 SEP	.330 <T	.350 <T	.330 <T	.330 <T
1991 OCT	.310 <T	.350 <T	.350 <T	.300 <T
1991 NOV	.330 <T	.300 <T	.330 <T	.250 <T
1992 JAN	.320 <T	.180 <T	.210 <T	.200 <T
1992 FEB	.270 <T	.280 <T	.280 <T	.280 <T
1992 MAR	.280 <T	.390 <T	.390 <T	.400 <T
1992 APR	.200 <T	.280 <T	.240 <T	.180 <T
1992 JUN	.200 <T	.270 <T	.460 <T	.380 <T
1992 JUL	.250 <T	.310 <T	.310 <T	.360 <T
1992 SEP	.270 <T	.190 <T	.200 <T	.230 <T
1992 NOV	.270 <T	.350 <T	.360 <T	.190 <T
VANADIUM (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = N/A
1991 MAR	.120 <T	.230 <T	.240 <T	.
1991 APR	.260 <T	.160 <T	.220 <T	.210 <T
1991 MAY	.280 <T	.240 <T	.230 <T	.200 <T
1991 JUN	.060 <T	BDL	.100 <T	BDL
1991 JUL	BDL	BDL	BDL	BDL
1991 AUG	.280 <T	.300 <T	.370 <T	.270 <T
1991 SEP	.200 <T	.210 <T	.180 <T	.170 <T
1991 OCT	.200 <T	.150 <T	.200 <T	.130 <T
1991 NOV	.080 <T	.060 <T	BDL	BDL
1992 JAN	.180 <T	.180 <T	.160 <T	.160 <T
1992 FEB	BDL	.080 <T	BDL	.070 <T
1992 MAR	BDL	BDL	.180 <T	BDL
1992 APR	BDL	BDL	BDL	BDL
1992 JUN	.200 <T	.190 <T	.180 <T	.190 <T
1992 JUL	.130 <T	.150 <T	.130 <T	.090 <T
1992 SEP	BDL	BDL	BDL	BDL
1992 NOV	.250 <T	.160 <T	.130 <T	.140 <T

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW		TREATMENT PLANT TREATED		DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
METALS						
ZINC (UG/L)				DET'N LIMIT = 0.20		GUIDELINE = 5000 (A3)
1991 MAR	2.500		3.800		7.800	.
1991 APR	2.800		3.500		3.100	8.200
1991 MAY	3.700		8.100		13.000	8.600
1991 JUN	2.300		3.000		4.500	5.000
1991 JUL	2.200		1.800	<T	3.400	8.400
1991 AUG	.790	<T	1.900	<T	2.700	23.000
1991 SEP	3.000		2.500		3.300	3.300
1991 OCT	1.500	<T	2.300		2.800	34.000
1991 NOV	1.500	<T	2.500		2.500	30.000
1992 JAN	2.700		2.600		4.700	4.000
1992 FEB	3.200		4.800		5.700	5.500
1992 MAR	1.100	<T	1.500	<T	2.700	22.000
1992 APR	4.800		4.200		5.200	30.000
1992 JUN	1.600	<T	2.700		2.600	5.600
1992 JUL	3.800		3.200		3.700	5.500
1992 SEP	.990	<T	3.300		4.200	5.600
1992 NOV	2.400		2.600		4.200	2.400

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
CHLOROAROMATICS				
HEXACHLOROBUTADIENE (NG/L)			DET'N LIMIT = 1.000	GUIDELINE = 450 (D4)
35 SAMPLES	BDL	BDL	BDL	.
123-TRICHLOROBENZENE (NG/L)			DET'N LIMIT = 5.000	GUIDELINE = N/A
35 SAMPLES	BDL	BDL	BDL	.
1234-TETCLOROBENZENE (NG/L)			DET'N LIMIT = 1.000	GUIDELINE = N/A
35 SAMPLES	BDL	BDL	BDL	.
1235-TETCLOROBENZENE (NG/L)			DET'N LIMIT = 1.000	GUIDELINE = N/A
35 SAMPLES	BDL	BDL	BDL	.
124-TRICHLOROBENZENE (NG/L)			DET'N LIMIT = 5.000	GUIDELINE = 10000 (I)
32 SAMPLES	BDL	BDL	BDL	.
1245-TETCLOROBENZENE (NG/L)			DET'N LIMIT = 1.000	GUIDELINE = 38000 (D4)
35 SAMPLES	BDL	BDL	BDL	.
135-TRICHLOROBENZENE (NG/L)			DET'N LIMIT = 5.000	GUIDELINE = N/A
35 SAMPLES	BDL	BDL	BDL	.
HEXACHLOROBENZENE (NG/L)			DET'N LIMIT = 1.000	GUIDELINE = 10 (C1)
35 SAMPLES	BDL	BDL	BDL	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
CHLOROAROMATICS				
HEXACHLOROETHANE (NG/L) DET'N LIMIT = 1.000 GUIDELINE = 1900 (D4)				
1991 MAR	!QU	3.000 <T	BDL	.
1991 APR	BDL	BDL	2.000 <T	.
1991 MAY	BDL	BDL	BDL	.
1991 JUN	!AW	!AW	!AW	.
1991 JUL	!AW	!AW	!AW	.
1991 AUG	!AW	!AW	!AW	.
1991 SEP	!AW	!AW	!AW	.
1991 OCT	BDL	BDL	BDL	.
1991 NOV	BDL	BDL	BDL	.
1992 FEB	BDL	BDL	BDL	.
1992 MAR	BDL	BDL	BDL	.
1992 APR	BDL	BDL	BDL	.
1992 JUN	BDL	BDL	BDL	.
1992 JUL	BDL	BDL	BDL	.
1992 SEP	BDL	BDL	BDL	.
1992 NOV	BDL	BDL	BDL	.
OCTACHLOROSTYRENE (NG/L) DET'N LIMIT = 1.000 GUIDELINE = N/A				
35 SAMPLES	BDL	BDL	BDL	.
PENTACHLOROBENZENE (NG/L) DET'N LIMIT = 1.000 GUIDELINE = 74000 (D4)				
35 SAMPLES	BDL	BDL	BDL	.
236-TRICHLOROTOLUENE (NG/L) DET'N LIMIT = 5.000 GUIDELINE = N/A				
35 SAMPLES	BDL	BDL	BDL	.
245-TRICHLOROTOLUENE (NG/L) DET'N LIMIT = 5.000 GUIDELINE = N/A				
35 SAMPLES	BDL	BDL	BDL	.
26A-TRICHLOROTOLUENE (NG/L) DET'N LIMIT = 5.000 GUIDELINE = N/A				
35 SAMPLES	BDL	BDL	BDL	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
CHLOROPHENOLS				
234-TRICHLOROPHENOL (NG/L)		DET'N LIMIT = 100.0		GUIDELINE = N/A
6 SAMPLES	BDL	BDL	.	.
2345-TETCHLOROPHENOL (NG/L)		DET'N LIMIT = 20.0		GUIDELINE = N/A
6 SAMPLES	BDL	BDL	.	.
2356-TETCHLOROPHENOL (NG/L)		DET'N LIMIT = 10.0		GUIDELINE = N/A
6 SAMPLES	BDL	BDL	.	.
245-TRICHLOROPHENOL (NG/L)		DET'N LIMIT = 100.0		GUIDELINE = 2600000 (D4)
6 SAMPLES	BDL	BDL	.	.
246-TRICHLOROPHENOL (NG/L)		DET'N LIMIT = 20.0		GUIDELINE = 5000 (A1)
1991 JUN	BDL	BDL	.	.
1991 NOV	BDL	BDL	.	.
1992 NOV	BDL	30.000 <T	.	.
PENTACHLOROPHENOL (NG/L)		DET'N LIMIT = 10.00		GUIDELINE = 60000 (A1)
6 SAMPLES	BDL	BDL	.	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
PESTICIDES AND PCB				
ALDRIN (NG/L)			DET'N LIMIT = 1.000	GUIDELINE = 700 (A1)
35 SAMPLES	BDL	BDL	BDL	.
ALPHA BHC (NG/L)			DET'N LIMIT = 1.000	GUIDELINE = 700 (G)
1991 MAR	!QU	BDL	BDL	.
1991 APR	BDL	BDL	BDL	.
1991 MAY	BDL	BDL	BDL	.
1991 JUN	!AW	!AW	!AW	.
1991 JUL	!AW	!AW	!AW	.
1991 AUG	!AW	!AW	!AW	.
1991 SEP	!AW	!AW	!AW	.
1991 OCT	BDL	BDL	BDL	.
1991 NOV	BDL	BDL	BDL	.
1992 FEB	BDL	1.000 <T	1.000 <T	.
1992 MAR	BDL	1.000 <T	1.000 <T	.
1992 APR	BDL	1.000 <T	BDL	.
1992 JUN	BDL	1.000 <T	BDL	.
1992 JUL	BDL	BDL	BDL	.
1992 SEP	BDL	BDL	BDL	.
1992 NOV	BDL	1.000 <T	BDL	.
BETA BHC (NG/L)			DET'N LIMIT = 1.00	GUIDELINE = 300 (G)
35 SAMPLES	BDL	BDL	BDL	.
LINDANE (GAMMA BHC) (NG/L)			DET'N LIMIT = 1.000	GUIDELINE = 4000 (A1)
35 SAMPLES	BDL	BDL	BDL	.
ALPHA CHLORDANE (NG/L)			DET'N LIMIT = 2.000	GUIDELINE = 7000 (A1)
35 SAMPLES	BDL	BDL	BDL	.
GAMMA CHLORDANE (NG/L)			DET'N LIMIT = 2.00	GUIDELINE = 7000 (A1)
35 SAMPLES	BDL	BDL	BDL	.
DIELDRIN (NG/L)			DET'N LIMIT = 2.00	GUIDELINE = 700 (A1)
35 SAMPLES	BDL	BDL	BDL	.
METHOXYCHLOR (NG/L)			DET'N LIMIT = 5.0	GUIDELINE = 900000 (A1)
35 SAMPLES	BDL	BDL	BDL	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
PESTICIDES AND PCB				
ENDOSULFAN 1 (NG/L)			DET'N LIMIT = 2.00	GUIDELINE = 74000 (D4)
35 SAMPLES	BDL	BDL	BDL	.
ENDOSULFAN II (NG/L)			DET'N LIMIT = 5.000	GUIDELINE = 74000 (D4)
35 SAMPLES	BDL	BDL	BDL	.
ENDRIN (NG/L)			DET'N LIMIT = 5.000	GUIDELINE = 1600 (D3)
35 SAMPLES	BDL	BDL	BDL	.
ENDOSULFAN SULPHATE (NG/L)			DET'N LIMIT = 5.00	GUIDELINE = N/A
35 SAMPLES	BDL	BDL	BDL	.
HEPTACHLOR EPOXIDE (NG/L)			DET'N LIMIT = 1.000	GUIDELINE = 3000 (A1)
20 SAMPLES	BDL	BDL	BDL	.
HEPTACHLOR (NG/L)			DET'N LIMIT = 1.000	GUIDELINE = 3000 (A1)
35 SAMPLES	BDL	BDL	BDL	.
MIREX (NG/L)			DET'N LIMIT = 5.000	GUIDELINE = N/A
35 SAMPLES	BDL	BDL	BDL	.
OXYCHLORDANE (NG/L)			DET'N LIMIT = 2.000	GUIDELINE = N/A
35 SAMPLES	BDL	BDL	BDL	.
O,P-DDT (NG/L)			DET'N LIMIT = 5.000	GUIDELINE = 30000 (A1)
35 SAMPLES	BDL	BDL	BDL	.
PCB (NG/L)			DET'N LIMIT = 20.00	GUIDELINE = 3000 (A2)
35 SAMPLES	BDL	BDL	BDL	.
P,P-DDD (NG/L)			DET'N LIMIT = 5.000	GUIDELINE = 30000 (A1)
35 SAMPLES	BDL	BDL	BDL	.
P,P-DDE (NG/L)			DET'N LIMIT = 1.000	GUIDELINE = 30000 (A1)
35 SAMPLES	BDL	BDL	BDL	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
PESTICIDES AND PCB				
P,P-DDT (NG/L)			DET'N LIMIT = 5.000	GUIDELINE = 30000 (A1)
35 SAMPLES	BDL	BDL	BDL	.
TOXAPHENE (NG/L)			DET'N LIMIT = 500.0	GUIDELINE = 5000 (A1)
33 SAMPLES	BDL	BDL	BDL	.
AMETRINE (NG/L)			DET'N LIMIT = 50.0	GUIDELINE = 300000 (D3)
22 SAMPLES	BDL	BDL	.	.
ATRAZINE (NG/L)			DET'N LIMIT = 50.0	GUIDELINE = 60000 (A2)
1991 MAR	150.000 <T	80.000 <T	.	.
1991 APR	BDL	BDL	.	.
1991 MAY	BDL	BDL	.	.
1991 JUN	!AW	!AW	.	.
1991 JUL	!AW	!AW	.	.
1991 AUG	!AW	!AW	.	.
1991 SEP	!AW	!AW	.	.
1991 OCT	!AW	!AW	.	.
1991 NOV	120.000 <T	110.000 <T	.	.
1992 FEB	60.000 <T	100.000 <T	.	.
1992 MAR	100.000 <T	90.000 <T	.	.
1992 APR	60.000 <T	50.000 <T	.	.
1992 JUN	BDL	BDL	.	.
1992 JUL	110.000 <T	100.000 <T	.	.
1992 SEP	120.000 <T	110.000 <T	.	.
1992 NOV	80.000 <T	100.000 <T	.	.
ATRATONE (NG/L)			DET'N LIMIT = 50.0	GUIDELINE = N/A
20 SAMPLES	BDL	BDL	.	.
CYANAZINE (BLADEX) (NG/L)			DET'N LIMIT = 100.0	GUIDELINE = 10000 (A2)
22 SAMPLES	BDL	BDL	.	.
DESETHYL ATRAZINE (NG/L)			DET'N LIMIT = 200.0	GUIDELINE = 60000 (A2)
22 SAMPLES	BDL	BDL	.	.
DESETHYL SIMAZINE (NG/L)			DET'N LIMIT = 200.0	GUIDELINE = 10000 (A2)
20 SAMPLES	BDL	BDL	.	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	OIST. SYSTEM SIMCOE ST S STANDING
PESTICIDES AND PCB				
PROMETONE (NG/L)			DET'N LIMIT = 50.000	GUIDELINE = 52500 (D3)
22 SAMPLES	BDL	BDL	.	.
PROPAZINE (NG/L)			DET'N LIMIT = 50.000	GUIDELINE = 700000 (D3)
22 SAMPLES	BDL	BDL	.	.
PROMETRYNE (NG/L)			DET'N LIMIT = 50.000	GUIDELINE = 1000 (A2)
22 SAMPLES	BDL	BDL	.	.
METRIBUZIN (SENCOR) (NG/L)			DET'N LIMIT = 100.0	GUIDELINE = 80000 (A1)
22 SAMPLES	BDL	BDL	.	.
SIMAZINE (NG/L)			DET'N LIMIT = 50.00	GUIDELINE = 10000 (A2)
22 SAMPLES	BDL	BDL	.	.
ALACHLOR (LASSO) (NG/L)			DET'N LIMIT = 500.0	GUIDELINE = 5000 (A2)
22 SAMPLES	BDL	BDL	.	.
METOLACHLOR (NG/L)			DET'N LIMIT = 500.0	GUIDELINE = 50000 (A2)
22 SAMPLES	BDL	BDL	.	.
HEXACLCYCLOPENTADIEN (NG/L)			DET'N LIMIT = 5.00	GUIDELINE = 206000 (D4)
1991 MAR	!QU	40.000 <T	83.000	.
1991 APR	BDL	100.000	160.000	.
1991 MAY	BDL	24.000 <T	16.000 <T	.
1991 JUN	!AW	!AW	!AW	.
1991 JUL	!AW	!AW	!AW	.
1991 AUG	!AW	!AW	!AW	.
1991 SEP	!AW	!AW	!AW	.
1991 OCT	BDL	BDL	10.000 <T	.
1991 NOV	BDL	20.000 <T	16.000 <T	.
1992 FEB	BDL	24.000 <T	BDL	.
1992 MAR	BDL	BDL	28.000 <T	.
1992 APR	!QU	!QU	!QU	.
1992 JUN	!QU	!QU	!QU	.
1992 JUL	!QU	!QU	!QU	.
1992 SEP	!QU	!QU	!QU	.
1992 NOV	!QU	!QU	!QU	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
PHENOLICS (UG/L	PHENOLICS)		DET'N LIMIT = 0.2	GUIDELINE = N/A
1991 MAR	.800 <T	.800 <T	.	.
1991 APR	1.600	.400 <T	.	.
1991 MAY	BDL	.800 <T	.	.
1991 JUN	BDL	1.200	.	.
1991 JUL	BDL	.600 <T	.	.
1991 AUG	BDL	BDL	.	.
1991 SEP	.800 <T	1.000	.	.
1991 OCT	.800 <T	.400 <T	.	.
1991 NOV	.600 <T	BDL	.	.
1992 JAN	.600 <T	.600 <T	.	.
1992 FEB	BDL	BDL	.	.
1992 MAR	BDL	BDL	.	.
1992 APR	BDL	.800 <T	.	.
1992 JUN	BDL	.600 <T	.	.
1992 JUL	.400 <T	.400 <T	.	.
1992 SEP	BDL	BDL	.	.
1992 NOV	BDL	BDL	.	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
POLYAROMATIC HYDROCARBONS				
PHENANTHRENE (NG/L)			DET'N LIMIT = 10.0	GUIDELINE = N/A
13 SAMPLES	BDL	BDL	BDL	.
ANTHRACENE (NG/L)			DET'N LIMIT = 1.0	GUIDELINE = N/A
13 SAMPLES	BDL	BDL	BDL	.
FLUORANTHENE (NG/L)			DET'N LIMIT = 20.0	GUIDELINE = 42000 (D4)
13 SAMPLES	BDL	BDL	BDL	.
PYRENE (NG/L)			DET'N LIMIT = 20.0	GUIDELINE = N/A
13 SAMPLES	BDL	BDL	BDL	.
BENZO(A)ANTHRACENE (NG/L)			DET'N LIMIT = 20.0	GUIDELINE = N/A
13 SAMPLES	BDL	BDL	BDL	.
CHRYSENE (NG/L)			DET'N LIMIT = 50.0	GUIDELINE = N/A
13 SAMPLES	BDL	BDL	BDL	.
DIMETH. BENZ(A)ANTHR (NG/L)			DET'N LIMIT = 5.0	GUIDELINE = N/A
10 SAMPLES	BDL	BDL	BDL	.
BENZO(E) PYRENE (NG/L)			DET'N LIMIT = 50.0	GUIDELINE = N/A
13 SAMPLES	BDL	BDL	BDL	.
BENZO(B) FLUORANTHEN (NG/L)			DET'N LIMIT = 10.0	GUIDELINE = N/A
13 SAMPLES	BDL	BDL	BDL	.
PERYLENE (NG/L)			DET'N LIMIT = 10.0	GUIDELINE = N/A
13 SAMPLES	BDL	BDL	BDL	.
BENZO(K) FLUORANTHEN (NG/L)			DET'N LIMIT = 1.0	GUIDELINE = N/A
13 SAMPLES	BDL	BDL	BDL	.
BENZO(A) PYRENE (NG/L)			DET'N LIMIT = 5.0	GUIDELINE = 10 (A1)
13 SAMPLES	BDL	BDL	BDL	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
POLYAROMATIC HYDROCARBONS				
BENZO(G,H,I) PERYLEN (NG/L)			DET'N LIMIT = 20.0	GUIDELINE = N/A
13 SAMPLES	BDL	BDL	BDL	.
DIBENZO(A,H) ANTHRAC (NG/L)			DET'N LIMIT = 10.0	GUIDELINE = N/A
13 SAMPLES	BDL	BDL	BDL	.
INDENO(1,2,3-C,D) PY (NG/L)			DET'N LIMIT = 20.0	GUIDELINE = N/A
13 SAMPLES	BDL	BDL	BDL	.
BENZO(B) CHRYSENE (NG/L)			DET'N LIMIT = 2.0	GUIDELINE = N/A
13 SAMPLES	BDL	BDL	BDL	.
CORONENE (NG/L)			DET'N LIMIT = 10.0	GUIDELINE = N/A
13 SAMPLES	BDL	BDL	BDL	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
SPECIFIC PESTICIDES				
TOXAPHENE (NG/L)			DET'N LIMIT = 500.0	GUIDELINE = 5000 (A1)
2 SAMPLES	IQU	BDL	BDL	.
2,4,5-T (NG/L)			DET'N LIMIT = 50.0	GUIDELINE = 280000 (A1)
6 SAMPLES	BDL	BDL	.	.
2,4-D (NG/L)			DET'N LIMIT = 100.0	GUIDELINE = 100000 (A1)
6 SAMPLES	BDL	BDL	.	.
2,4-DB (NG/L)			DET'N LIMIT = 200.0	GUIDELINE = N/A
6 SAMPLES	BDL	BDL	.	.
2,4 D PROPIONIC ACID (NG/L)			DET'N LIMIT = 100.0	GUIDELINE = N/A
6 SAMPLES	BDL	BDL	.	.
DICAMBA (NG/L)			DET'N LIMIT = 50.0	GUIDELINE = 120000 (A1)
6 SAMPLES	BDL	BDL	.	.
2,4,5-TP (SILVEX) (NG/L)			DET'N LIMIT = 20.00	GUIDELINE = 10000 (A1)
6 SAMPLES	BDL	BDL	.	.
DIAZINON (NG/L)			DET'N LIMIT = 20.0	GUIDELINE = 20000 (A1)
2 SAMPLES	BDL	BDL	.	.
DICHLOROVOS (NG/L)			DET'N LIMIT = 20.0	GUIDELINE = N/A
2 SAMPLES	BDL	BDL	.	.
CHLORPYRIFOS (NG/L)			DET'N LIMIT = 20.0	GUIDELINE = N/A
2 SAMPLES	BDL	BDL	.	.
ETHION (NG/L)			DET'N LIMIT = 20.0	GUIDELINE = 35000 (G)
2 SAMPLES	BDL	BDL	.	.
MALATHION (NG/L)			DET'N LIMIT = 20.0	GUIDELINE = 190000 (A1)
2 SAMPLES	BDL	BDL	.	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
SPECIFIC PESTICIDES				
MEVINPHOS (NG/L)			DET'N LIMIT = 20.0	GUIDELINE = N/A
2 SAMPLES	BDL	BDL	.	.
METHYL PARATHION (NG/L)			DET'N LIMIT = 50.0	GUIDELINE = 9000 (D3)
2 SAMPLES	BDL	BDL	.	.
METHYLTRITHION (NG/L)			DET'N LIMIT = 20.0	GUIDELINE = N/A
2 SAMPLES	BDL	BDL	.	.
PARATHION (NG/L)			DET'N LIMIT = 20.0	GUIDELINE = 50000 (A1)
2 SAMPLES	BDL	BDL	.	.
PHORATE (NG/L)			DET'N LIMIT = 20.0	GUIDELINE = 2000 (A2)
2 SAMPLES	BDL	BDL	.	.
RELDAN (NG/L)			DET'N LIMIT = 20.0	GUIDELINE = N/A
2 SAMPLES	BDL	BDL	.	.
RONNEL (NG/L)			DET'N LIMIT = 20.0	GUIDELINE = N/A
2 SAMPLES	BDL	BDL	.	.
CARBOFURAN (NG/L)			DET'N LIMIT = 2000.0	GUIDELINE = 90000 (A1)
6 SAMPLES	BDL	BDL	.	.
CHLORPROPHAM (CIPC) (NG/L)			DET'N LIMIT = 2000.0	GUIDELINE = 350000 (G)
6 SAMPLES	BDL	BDL	.	.
DIALLATE (NG/L)			DET'N LIMIT = 2000.0	GUIDELINE = N/A
6 SAMPLES	BDL	BDL	.	.
EPTAM (NG/L)			DET'N LIMIT = 2000.0	GUIDELINE = N/A
6 SAMPLES	BDL	BDL	.	.
IPC (NG/L)			DET'N LIMIT = 2000.0	GUIDELINE = N/A
6 SAMPLES	BDL	BDL	.	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
SPECIFIC PESTICIDES				
PROPOXUR (NG/L)			DET'N LIMIT = 2000.0	GUIDELINE = 140000 (03)
6 SAMPLES	BDL .	BDL	.	.
CARBARYL (NG/L)			DET'N LIMIT = 200.0	GUIDELINE = 90000 (A1)
6 SAMPLES	BDL	BDL	.	.
BUTYLATE (NG/L)			DET'N LIMIT = 2000.0	GUIDELINE = 245000 (03)
6 SAMPLES	BDL	BDL	.	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
VOLATILES				
BENZENE (UG/L)		DET'N LIMIT = 0.05		GUIDELINE = 5 (A1)
50 SAMPLES	BDL	BDL	BDL	.
TOLUENE (UG/L)		DET'N LIMIT = 0.05		GUIDELINE = 24 (A3)
1991 MAR	BDL	BDL	BDL	.
1991 APR	BDL	BDL	BDL	.
1991 MAY	BDL	BDL	BDL	.
1991 JUN	BDL	BDL	BDL	.
1991 JUL	!AW	.050 <T	.050 <T	.
1991 AUG	BDL	.050 <T	BDL	.
1991 SEP	BDL	BDL	BDL	.
1991 OCT	BDL	.050 <T	BDL	.
1991 NOV	BDL	BDL	BDL	.
1992 JAN	BDL	BDL	BDL	.
1992 FEB	BDL	.050 <T	.100 <T	.
1992 MAR	BDL	BDL	BDL	.
1992 APR	BDL	BDL	BDL	.
1992 JUN	BDL	.100 <T	BDL	.
1992 JUL	BDL	.050 <T	BDL	.
1992 SEP	BDL	.050 <T	BDL	.
1992 NOV	BDL	.300 <T	.300 <T	.
ETHYLBENZENE (UG/L)		DET'N LIMIT = 0.05		GUIDELINE = 2.4 (A3)
1991 MAR	BDL	BDL	BDL	.
1991 APR	BDL	BDL	BDL	.
1991 MAY	BDL	BDL	BDL	.
1991 JUN	BDL	.100 <T	BDL	.
1991 JUL	!AW	.100 <T	.050 <T	.
1991 AUG	.100 <T	.050 <T	BDL	.
1991 SEP	.050 <T	.050 <T	.050 <T	.
1991 OCT	.050 <T	.100 <T	.050 <T	.
1991 NOV	.100 <T	.100 <T	.050 <T	.
1992 JAN	.050 <T	.100 <T	.050 <T	.
1992 FEB	BDL	.100 <T	.100 <T	.
1992 MAR	BDL	.050 <T	.100 <T	.
1992 APR	BDL	.100 <T	.100 <T	.
1992 JUN	.050 <T	.100 <T	.100 <T	.
1992 JUL	BDL	.200 <T	.200 <T	.
1992 SEP	.100 <T	.100 <T	BDL	.
1992 NOV	BDL	BDL	.100 <T	.
P-XYLENE (UG/L)		DET'N LIMIT = 0.10		GUIDELINE = 300 (A3*)
50 SAMPLES	BDL	BDL	BDL	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
VOLATILES				
M-XYLENE (UG/L)		DET'N LIMIT = 0.10		GUIDELINE = 300 (A3*)
1991 MAR	BDL	BDL	BDL	.
1991 APR	BDL	BDL	BDL	.
1991 MAY	BDL	BDL	BDL	.
1991 JUN	BDL	BDL	BDL	.
1991 JUL	IAW	BDL	BDL	.
1991 AUG	BDL	BDL	BDL	.
1991 SEP	BDL	BDL	BDL	.
1991 OCT	BDL	.200 <T	.100 <T	.
1991 NOV	BDL	BDL	BDL	.
1992 JAN	BDL	BDL	BDL	.
1992 FEB	BDL	BDL	BDL	.
1992 MAR	BDL	BDL	BDL	.
1992 APR	BDL	BDL	BDL	.
1992 JUN	BDL	.100 <T	BDL	.
1992 JUL	BDL	BDL	BDL	.
1992 SEP	BDL	BDL	BDL	.
1992 NOV	BDL	BDL	BDL	.
O-XYLENE (UG/L)		DET'N LIMIT = 0.05		GUIDELINE = 300 (A3*)
1991 MAR	BDL	BDL	BDL	.
1991 APR	BDL	BDL	BDL	.
1991 MAY	BDL	BDL	BDL	.
1991 JUN	BDL	BDL	BDL	.
1991 JUL	IAW	BDL	.050 <T	.
1991 AUG	BDL	BDL	BDL	.
1991 SEP	BDL	BDL	.050 <T	.
1991 OCT	BDL	.150 <T	.100 <T	.
1991 NOV	BDL	BDL	BDL	.
1992 JAN	BDL	BDL	BDL	.
1992 FEB	BDL	BDL	BDL	.
1992 MAR	BDL	BDL	BDL	.
1992 APR	BDL	BDL	BDL	.
1992 JUN	BDL	BDL	BDL	.
1992 JUL	BDL	BDL	BDL	.
1992 SEP	BDL	BDL	BDL	.
1992 NOV	BDL	BDL	BDL	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
VOLATILES				
STYRENE (UG/L)		DET'N LIMIT = 0.05		GUIDELINE = 100 (D1)
1991 MAR	BDL	BDL	BDL	.
1991 APR	BDL	BDL	BDL	.
1991 MAY	BDL	BDL	BDL	.
1991 JUN	BDL	.150 <T	.100 <T	.
1991 JUL	!AW	.200 <T	.150 <T	.
1991 AUG	.250 <T	.150 <T	.100 <T	.
1991 SEP	.150 <T	.050 <T	.150 <T	.
1991 OCT	.150 <T	.050 <T	.200 <T	.
1991 NOV	.200 <T	.150 <T	.200 <T	.
1992 JAN	.100 <T	.050 <T	.150 <T	.
1992 FEB	.050 <T	.100 <T	.150 <T	.
1992 MAR	BDL	BDL	.150 <T	.
1992 APR	BDL	.150 <T	.100 <T	.
1992 JUN	.050 <T	.100 <T	.250 <T	.
1992 JUL	BDL	.250 <T	.400 <T	.
1992 SEP	.150 <T	.250 <T	BDL	.
1992 NOV	BDL	.200 <T	.200 <T	.
1,1-DICHLOROETHYLENE (UG/L)		DET'N LIMIT = 0.100		GUIDELINE = 7 (D1)
50 SAMPLES	BDL	BDL	BDL	.
METHYLENE CHLORIDE (UG/L)		DET'N LIMIT = 0.50		GUIDELINE = 50 (A1)
50 SAMPLES	BDL	BDL	BDL	.
T12-DICHLOROETHYLENE (UG/L)		DET'N LIMIT = 0.10		GUIDELINE = 70 (D1)
50 SAMPLES	BDL	BDL	BDL	.
1,1-DICHLOROETHANE (UG/L)		DET'N LIMIT = 0.100		GUIDELINE = N/A
50 SAMPLES	BDL	BDL	BDL	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
VOLATILES				
CHLORDFORM (UG/L)		DET'N LIMIT = 0.10		GUIDELINE = 350 (A1+)
1991 MAR	BDL	31.200	30.800	.
1991 APR	BDL	55.500	33.000	.
1991 MAY	BDL	38.200	21.300	.
1991 JUN	BDL	12.800	9.900	.
1991 JUL	IAW	22.500	17.500	.
1991 AUG	14.800	30.800	22.600	.
1991 SEP	BDL	30.400	21.800	.
1991 OCT	.100 <T	12.400	10.300	.
1991 NOV	BDL	12.000	8.400	.
1992 JAN	BDL	10.200	4.300	.
1992 FEB	BDL	14.700	9.400	.
1992 MAR	BDL	14.600	8.300	.
1992 APR	BDL	41.600	40.500	.
1992 JUN	BDL	38.900	30.800	.
1992 JUL	BDL	37.300	29.900	.
1992 SEP	BDL	13.600	12.800	.
1992 NOV	.100 <T	20.300	19.500	.
111,TRICHLOROETHANE (UG/L)		DET'N LIMIT = 0.02		GUIDELINE = 200 (D1)
1991 MAR	.340	BDL	BDL	.
1991 APR	.060 <T	BDL	BDL	.
1991 MAY	BDL	BDL	BDL	.
1991 JUN	.040 <T	BDL	BDL	.
1991 JUL	IAW	BDL	BDL	.
1991 AUG	BDL	BDL	BDL	.
1991 SEP	BDL	BDL	.480	.
1991 OCT	BDL	BDL	BDL	.
1991 NOV	BDL	BDL	BDL	.
1992 JAN	BDL	BDL	BDL	.
1992 FEB	BDL	BDL	BDL	.
1992 MAR	BDL	BDL	BDL	.
1992 APR	BDL	BDL	BDL	.
1992 JUN	BDL	BDL	BDL	.
1992 JUL	BDL	BDL	BDL	.
1992 SEP	BDL	BDL	BDL	.
1992 NOV	BDL	BDL	BDL	.
1,2 DICHLOROETHANE (UG/L)		DET'N LIMIT = 0.05		GUIDELINE = 5 (A1)
50 SAMPLES	BDL	BDL	BDL	.
CARBON TETRACHLORIDE (UG/L)		DET'N LIMIT = 0.20		GUIDELINE = 5 (A1)
50 SAMPLES	BDL	BDL	BDL	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING	
VOLATILES					
1,2-DICHLOROPROPANE (UG/L)			DET'N LIMIT = 0.05		GUIDELINE = 5 (D1)
50 SAMPLES	BDL	BDL	BDL	.	
TRICHLOROETHYLENE (UG/L)			DET'N LIMIT = 0.10		GUIDELINE = 50 (A1)
50 SAMPLES	BDL	BDL	BDL	.	
DICHLOROBROMOMETHANE (UG/L)			DET'N LIMIT = 0.05		GUIDELINE = 350 (A1+)
1991 MAR	BDL	4.850	3.300	.	
1991 APR	BDL	7.000	6.800	.	
1991 MAY	BDL	8.700	7.200	.	
1991 JUN	BDL	9.950	6.850	.	
1991 JUL	!AW	12.150	9.150	.	
1991 AUG	9.150	11.750	11.200	.	
1991 SEP	BDL	14.300	10.300	.	
1991 OCT	BDL	11.150	8.600	.	
1991 NOV	BDL	10.200	6.350	.	
1992 JAN	BDL	9.850	3.850	.	
1992 FEB	BDL	11.850	6.500	.	
1992 MAR	BDL	12.350	6.150	.	
1992 APR	BDL	9.000	6.100	.	
1992 JUN	BDL	18.450	15.150	.	
1992 JUL	BDL	17.000	14.600	.	
1992 SEP	BDL	10.650	8.150	.	
1992 NOV	BDL	10.950	8.000	.	
112-TRICHLOROETHANE (UG/L)			DET'N LIMIT = 0.05		GUIDELINE = 0.6 (D4)
50 SAMPLES	BDL	BDL	BDL	.	

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
VOLATILES				
CHLORODIBROMOMETHANE (UG/L)		DET'N LIMIT = 0.10		GUIDELINE = 350 (A1+)
1991 MAR	BDL	.300 <T	.300 <T	.
1991 APR	BDL	.400 <T	1.300	.
1991 MAY	BDL	1.000 <T	1.400	.
1991 JUN	BDL	5.200	3.500	.
1991 JUL	IAW	5.700	4.300	.
1991 AUG	4.600	4.800	5.300	.
1991 SEP	BDL	5.900	4.600	.
1991 OCT	BDL	6.400	5.100	.
1991 NOV	BDL	5.300	3.200	.
1992 JAN	BDL	5.200	2.600	.
1992 FEB	BDL	5.100	3.000	.
1992 MAR	BDL	5.400	3.000	.
1992 APR	BDL	.800 <T	.600 <T	.
1992 JUN	BDL	6.400	5.200	.
1992 JUL	BDL	7.000	6.400	.
1992 SEP	BDL	5.100	3.600	.
1992 NOV	BDL	2.700	2.000	.
TETRACHLOROETHYLENE (UG/L)		DET'N LIMIT = 0.05		GUIDELINE = 65 (A5)
1991 MAR	.050 <T	.050 <T	BDL	.
1991 APR	BDL	BDL	.100 <T	.
1991 MAY	BDL	BDL	BDL	.
1991 JUN	BDL	BDL	BDL	.
1991 JUL	IAW	BDL	BDL	.
1991 AUG	BDL	BDL	BDL	.
1991 SEP	BDL	BDL	BDL	.
1991 OCT	BDL	BDL	BDL	.
1991 NOV	BDL	BDL	BDL	.
1992 JAN	BDL	BDL	BDL	.
1992 FEB	BDL	BDL	BDL	.
1992 MAR	BDL	BDL	BDL	.
1992 APR	BDL	BDL	BDL	.
1992 JUN	BDL	BDL	BDL	.
1992 JUL	BDL	BDL	BDL	.
1992 SEP	BDL	BDL	BDL	.
1992 NOV	BDL	BDL	BDL	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
VOLATILES				
BROMOFORM (UG/L)			DET'N LIMIT = 0.20	GUIDELINE = 350 (A1+)
1991 MAR	BDL	BDL	BDL	.
1991 APR	BDL	BDL	BDL	.
1991 MAY	BDL	BDL	BDL	.
1991 JUN	BDL	.800 <T	BDL	.
1991 JUL	IAW	.600 <T	.400 <T	.
1991 AUG	.600 <T	.600 <T	.600 <T	.
1991 SEP	BDL	BDL	.600 <T	.
1991 OCT	BDL	1.000 <T	.600 <T	.
1991 NOV	BDL	BDL	BDL	.
1992 JAN	BDL	.600 <T	BDL	.
1992 FEB	BDL	BDL	BDL	.
1992 MAR	BDL	BDL	BDL	.
1992 APR	BDL	BDL	BDL	.
1992 JUN	BDL	BDL	BDL	.
1992 JUL	BDL	BDL	BDL	.
1992 SEP	BDL	BDL	BDL	.
1992 NOV	BDL	BDL	BDL	.
1122-TETCHLOROETHANE (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 0.17 (D4)
50 SAMPLES	BDL	BDL	BDL	.
VINYL CHLORIDE (UG/L)			DET'N LIMIT = 0.100	GUIDELINE = 2 (D1)
21 SAMPLES	BDL	BDL	BDL	.
C12-DICHLOROETHYLENE (UG/L)			DET'N LIMIT = 0.100	GUIDELINE = 70 (D1)
21 SAMPLES	BDL	BDL	BDL	.
CHLOROBENZENE (UG/L)			DET'N LIMIT = 0.10	GUIDELINE = 1510 (D3)
50 SAMPLES	BDL	BDL	BDL	.
1,4-DICHLOROBENZENE (UG/L)			DET'N LIMIT = 0.10	GUIDELINE = 5 (A1)
50 SAMPLES	BDL	BDL	BDL	.
1,3-DICHLOROBENZENE (UG/L)			DET'N LIMIT = 0.10	GUIDELINE = 3750 (D3)
50 SAMPLES	BDL	BDL	BDL	.
1,2-DICHLOROBENZENE (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 200 (A1)
50 SAMPLES	BDL	BDL	BDL	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
VOLATILES				
ETHYLENE DIBROMIDE (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 50 (D1)
50 SAMPLES	BDL	BDL	BDL	.
TOTL TRIHALOMETHANES (UG/L)			DET'N LIMIT = 0.50	GUIDELINE = 350 (A1)
1991 MAR	BDL	36.300	34.350	.
1991 APR	BDL	62.850	41.100	.
1991 MAY	BDL	47.900	29.900	.
1991 JUN	BDL	28.750	20.250	.
1991 JUL	!AW	40.950	31.350	.
1991 AUG	29.150	47.350	39.700	.
1991 SEP	BDL	51.200	37.300	.
1991 OCT	BDL	30.950	24.600	.
1991 NOV	BDL	27.500	17.950	.
1992 JAN	BDL	25.800	10.700	.
1992 FEB	BDL	31.650	18.900	.
1992 MAR	BDL	32.350	17.450	.
1992 APR	BDL	51.400	47.200	.
1992 JUN	BDL	63.750	51.150	.
1992 JUL	BDL	61.300	50.900	.
1992 SEP	BDL	29.350	24.550	.
1992 NOV	BDL	33.950	29.500	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992 NAPANEE WTP

	TREATMENT PLANT RAW	TREATMENT PLANT TREATED	DIST. SYSTEM SIMCOE ST S FREE FLOW	DIST. SYSTEM SIMCOE ST S STANDING
RADIONUCLIDES				
COBALT 60 (BQ/L)			DET'N LIMIT = 0.70	GUIDELINE = N/A
4 SAMPLES	BDL	BDL	.	.
CESIUM 134 (BQ/L)			DET'N LIMIT = 0.70	GUIDELINE = N/A
4 SAMPLES	BDL	BDL	.	.
CESIUM 137 (BQ/L)			DET'N LIMIT = 0.70	GUIDELINE = 50 (A1)
4 SAMPLES	BDL	BDL	.	.
GROSS ALPHA COUNT (BQ/L)			DET'N LIMIT = 0.04	GUIDELINE = 0.55 (D1)
4 SAMPLES	BDL	BDL	.	.
GROSS BETA COUNT (BQ/L)			DET'N LIMIT = 0.04	GUIDELINE = N/A
1991 MAY	.050	.060	.	.
1992 JUN	.100	.080	.	.
TRITIUM (BQ/L)			DET'N LIMIT = 7.00	GUIDELINE = 40000 (A1)
1991 MAY	BDL	BDL	.	.
1992 JUN	BDL	12.000	.	.
IODINE 131 (BQ/L)			DET'N LIMIT = 0.70	GUIDELINE = 10 (A1)
4 SAMPLES	BDL	BDL	.	.

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE	
BACTERIOLOGICAL				
FECAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	0	(A1)
STANDARD PLATE COUNT MEMBRANE FILT.	CT/ML	0	500/ML	(A3)
TOTAL COLIFORM BACKGROUND MF	CT/100ML	0	N/A	
TOTAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	5/100ML	(A1)
CHEMISTRY (FLD)				
FIELD COMBINED CHLORINE RESIDUAL	MG/L	0	N/A	
FIELD TOTAL CHLORINE RESIDUAL	MG/L	0	N/A	
FIELD FREE CHLORINE RESIDUAL	MG/L	0	N/A	
FIELD PH	DMNSLESS	N/A	6.5-8.5	(A4)
FIELD TEMPERATURE	DEG.C	N/A	15.0	(A3)
FIELD TURBIDITY	FTU	N/A	1.0	(A1)
CHEMISTRY (LAB)				
ALKALINITY	MG/L	0.20	30-500	(A4)
AMMONIUM TOTAL	MG/L	0.002	0.05	(F2)
CALCIUM	MG/L	0.20	100.0	(F2)
CHLORIDE	MG/L	0.20	250.0	(A3)
COLOUR	TCU	0.50	5.0	(A3)
CONDUCTIVITY	UMHO/CM	1.00	400.0	(F2)
CYANIDE	MG/L	0.001	0.2	(A1)
DISSOLVED ORGANIC CARBON	MG/L	0.10	5.0	(A3)
FLUORIDE	MG/L	0.01	1.5*	(A1)
HARDNESS	MG/L	0.50	80-100	(A4)
IONCAL	DMNSLESS	N/A	N/A	
LANGELIERS INDEX	DMNSLESS	N/A	N/A	
MAGNESIUM	MG/L	0.10	30.0	(F2)
NITRATES (TOTAL)	MG/L	0.005	10.0	(A1)
NITRITE	MG/L	0.001	1.0	(A1)
NITROGEN TOTAL KJELDAHL	MG/L	0.02	N/A	
PH	DMNSLESS	N/A	6.5-8.5	(A4)
PHOSPHORUS FIL REACT	MG/L	0.0005	N/A	
PHOSPHORUS TOTAL	MG/L	0.002	0.4	(F2)
POTASSIUM	MG/L	0.010	10.0	(F2)
RESIDUE FILTRATE (CALCULATED TDS)	MG/L	N/A	500.0	(A3)
SODIUM	MG/L	0.20	200.0	(A4)
SULPHATE	MG/L	0.20	500.0	(A4)
TURBIDITY	FTU	0.05	1.0	(A1)

* The Maximum Acceptable Concentration (MAC) for naturally occurring fluoride in drinking water is 2.4 mg/L.

CHLOROAROMATICS				
1,2,3-TRICHLOROBENZENE	NG/L	5.0	N/A	
1,2,3,4-TETRACHLOROBENZENE	NG/L	1.0	N/A	
1,2,3,5-TETRACHLOROBENZENE	NG/L	1.0	N/A	
1,2,4-TRICHLOROBENZENE	NG/L	5.0	10000	(I)
1,2,4,5-TETRACHLOROBENZENE	NG/L	1.0	38000	(D4)
1,3,5-TRICHLOROBENZENE	NG/L	5.0	N/A	
2,3,6-TRICHLOROTOLUENE	NG/L	5.0	N/A	
2,4,5-TRICHLOROTOLUENE	NG/L	5.0	N/A	
2,6A-TRICHLOROTOLUENE	NG/L	5.0	N/A	
HEXACHLOROBENZENE (HCB)	NG/L	1.0	10	(C1)
HEXACHLOROBUTADIENE	NG/L	1.0	450	(D4)
HEXACHLOROETHANE	NG/L	1.0	1900	(D4)
OCTACHLOROSTYRENE	NG/L	1.0	N/A	
PENTACHLOROBENZENE	NG/L	1.0	74000	(D4)
CHLOROPHENOLS				
2,3,4-TRICHLOROPHENOL	NG/L	100.0	N/A	
2,3,4,5-TETRACHLOROPHENOL	NG/L	20.0	N/A	
2,3,5,6-TETRACHLOROPHENOL	NG/L	10.0	N/A	

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE	
2,4,5-TRICHLOROPHENOL	NG/L	100.0	2600000	(D4)
2,4,6-TRICHLOROPHENOL	NG/L	20.0	5000	(A1)
PENTACHLOROPHENOL	NG/L	10.0	60000	(A1)
METALS				
ALUMINUM	UG/L	0.10	100	(A4)
ANTIMONY	UG/L	0.05	146	(D4)
ARSENIC	UG/L	0.10	25	(A1)
BARIUM	UG/L	0.05	1000	(A2)
BERYLLIUM	UG/L	0.05	6800	(D4)
BORON	UG/L	2.00	5000	(A1)
CADMIUM	UG/L	0.05	5	(A1)
CHROMIUM	UG/L	0.50	50	(A1)
COBALT	UG/L	0.02	N/A	
COPPER	UG/L	0.50	1000	(A3)
IRON	UG/L	6.00	300	(A3)
LEAD	UG/L	0.05	10	(A1)
MANGANESE	UG/L	0.05	50	(A3)
MERCURY	UG/L	0.02	1	(A1)
MOLYBDENUM	UG/L	0.05	N/A	
NICKEL	UG/L	0.20	350	(D3)
SELENIUM	UG/L	1.00	10	(A1)
SILVER	UG/L	0.05	N/A	
STRONTIUM	UG/L	0.10	N/A	
THALLIUM	UG/L	0.05	13	(D4)
TITANIUM	UG/L	0.50	N/A	
URANIUM	UG/L	0.05	100	(A1)
VANADIUM	UG/L	0.05	N/A	
ZINC	UG/L	0.20	5000	(A3)
POLYNUCLEAR AROMATIC HYDROCARBONS				
ANTHRACENE	NG/L	1.0	N/A	
BENZO(A) ANTHRACENE	NG/L	20.0	N/A	
BENZO(A) PYRENE	NG/L	5.0	10	(A1)
BENZO(B) CHRYSENE	NG/L	2.0	N/A	
BENZO(B) FLUORANTHENE	NG/L	10.0	N/A	
BENZO(E) PYRENE	NG/L	50.0	N/A	
BENZO(G,H,I) PERYLENE	NG/L	20.0	N/A	
BENZO(K) FLUORANTHENE	NG/L	1.0	N/A	
CHRYSENE	NG/L	50.0	N/A	
CORONENE	NG/L	10.0	N/A	
DIBENZO(A,H) ANTHRACENE	NG/L	10.0	N/A	
DIMETHYL BENZO(A) ANTHRACENE	NG/L	5.0	N/A	
FLUORANTHENE	NG/L	20.0	42000	(D4)
INDENO(1,2,3-C,D) PYRENE	NG/L	20.0	N/A	
PERYLENE	NG/L	10.0	N/A	
PHENANTHRENE	NG/L	10.0	N/A	
PYRENE	NG/L	20.0	N/A	
PESTICIDES & PCB				
ALACHLOR (LASSO)	NG/L	500.0	5000	(A2)
ALDRIN	NG/L	1.0	700	(A1)
ALPHA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	700	(G)
ALPHA CHLORDANE	NG/L	2.0	7000	(A1)
AMETRINE	NG/L	50.0	300000	(D3)
ATRATONE	NG/L	50.0	N/A	
ATRAZINE	NG/L	50.0	60000	(A2)
DESETHYL ATRAZINE	NG/L	200.0	60000	(A2)
BETA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	300	(G)
CYANAZINE (BLADEX)	NG/L	100.0	10000	(A2)
DIELDRIN	NG/L	2.0	700	(A1)
ENDOSULFAN 1 (THIODAN I)	NG/L	2.0	74000	(D4)
ENDOSULFAN 2 (THIODAN II)	NG/L	5.0	74000	(D4)
ENDOSULFAN SULPHATE (THIODAN SULPHATE)	NG/L	5.0	N/A	

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE	
ENDRIN	NG/L	5.0	1600	(D3)
GAMMA CHLORDANE	NG/L	2.0	7000	(A1)
HEPTACHLOR	NG/L	1.0	3000	(A1)
HEPTACHLOR EPOXIDE	NG/L	1.0	3000	(A1)
HEXACHLOROCYCLOPENTADIENE	NG/L	5.0	206000	(D4)
LINDANE (GAMMA BHC)	NG/L	1.0	4000	(A1)
METHOXYCHLOR	NG/L	5.0	900000	(A1)
METOLACHLOR	NG/L	500.0	50000	(A2)
METRIBUZIN (SENCOR)	NG/L	100.0	80000	(A1)
MIREX	NG/L	5.0	N/A	
P,P-DDD	NG/L	5.0	30000	(A1)
O,P-DDT	NG/L	5.0	30000	(A1)
P,P-DDT	NG/L	5.0	30000	(A1)
P,P-DDE	NG/L	1.0	30000	(A1)
OXYCHLORDANE	NG/L	2.0	N/A	
PCB	NG/L	20.0	3000	(A2)
PROMETONE	NG/L	50.0	52500	(D3)
PROMETRYNE	NG/L	50.0	1000	(A2)
PROPAZINE	NG/L	50.0	700000	(D3)
SIMAZINE	NG/L	50.0	10000	(A2)
DESETHYL SIMAZINE	NG/L	200.0	10000	(A2)
TOXAPHENE	NG/L	500.0	5000	(A1)
PHENOLICS				
PHENOLICS (UNFILTERED REACTIVE)	UG/L	0.2	N/A	
SPECIFIC PESTICIDES				
2,4 D PROPIONIC ACID	NG/L	100.0	N/A	
2,4,5-TRICHLOROPHENOXY ACETIC ACID	NG/L	50.0	280000	(A1)
2,4-DICHLOROBUTYRIC ACID (2,4-D)	NG/L	100.0	100000	(A1)
2,4-DICHLORORPHENOXYBUTYRIC ACID (2,4-DB)	NG/L	200.0	N/A	
2,4,5-TP (SILVEX)	NG/L	20.0	10000	(A1)
BUTYLATE (SUTAN)	NG/L	2000.0	245000	(D3)
CARBARYL (SEVIN)	NG/L	200.0	90000	(A1)
CARBOFURAN	NG/L	2000.0	90000	(A1)
CHLORPROPHAM (CIPC)	NG/L	2000.0	350000	(G)
CHLORPYRIFOS (DURSBAN)	NG/L	20.0	N/A	
DIALLATE	NG/L	2000.0	N/A	
DIAZINON	NG/L	20.0	20000	(A1)
DICAMBA	NG/L	50.0	120000	(A1)
DICHLOROVOS	NG/L	20.0	N/A	
EPTAM	NG/L	2000.0	N/A	
ETHION	NG/L	20.0	35000	(G)
IPC	NG/L	2000.0	N/A	
MALATHION	NG/L	20.0	190000	(A1)
METHYL PARATHION	NG/L	50.0	9000	(D3)
METHYLTRITHION	NG/L	20.0	N/A	
MEVINPHOS	NG/L	20.0	N/A	
PARATHION	NG/L	20.0	50000	(A1)
PHORATE (THIMET)	NG/L	20.0	2000	(A2)
PICHLORAM	NG/L	100.0	190000	(A2)
PROPOXUR (BAYGON)	NG/L	2000.0	140000	(D3)
RELDAN	NG/L	20.0	N/A	
RONNEL	NG/L	20.0	N/A	
VOLATILES				
1,1-DICHLOROETHANE	UG/L	0.10	N/A	
1,1-DICHLOROETHYLENE	UG/L	0.10	7	(D1)
1,2-DICHLOROBENZENE	UG/L	0.05	200	(A1)
1,2-DICHLOROETHANE	UG/L	0.05	5	(A1)
1,2-DICHLOROPROPANE	UG/L	0.05	5	(D1)
1,3-DICHLOROBENZENE	UG/L	0.10	3750	(D3)
1,4-DICHLOROBENZENE	UG/L	0.10	5	(A1)
1,1,1-TRICHLOROETHANE	UG/L	0.02	200	(D1)
1,1,2-TRICHLOROETHANE	UG/L	0.05	0.6	(D4)
1,1,2,2-TETRACHLOROETHANE	UG/L	0.05	0.17	(D4)

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM 1991 AND 1992

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE	
BENZENE	UG/L	0.05	5	(A1)
BROMOFORM	UG/L	0.20	350	(A1+)
CARBON TETRACHLORIDE	UG/L	0.20	5	(A1)
CHLOROBENZENE	UG/L	0.10	1510	(D3)
CHLORODIBROMOMETHANE	UG/L	0.10	350	(A1+)
CHLOROFORM	UG/L	0.10	350	(A1+)
CIS 1,2-DICHLOROETHYLENE	UG/L	0.10	70	(D1)
DICHLOROBROMOMETHANE	UG/L	0.05	350	(A1+)
ETHYLENE DIBROMIDE	UG/L	0.05	50	(D1)
ETHYLBENZENE	UG/L	0.05	2.4	(A3)
M-XYLENE	UG/L	0.10	300	(A3*)
METHYLENE CHLORIDE	UG/L	0.50	50	(A1)
O-XYLENE	UG/L	0.05	300	(A3*)
P-XYLENE	UG/L	0.10	300	(A3*)
STYRENE	UG/L	0.05	100	(D1)
TETRACHLOROETHYLENE	UG/L	0.05	65	(A5)
TRANS 1,2-DICHLOROETHYLENE	UG/L	0.10	70	(D1)
TOLUENE	UG/L	0.05	24	(A3)
TOTAL TRIHALOMETHANES	UG/L	0.50	350	(A1)
TRICHLOROETHYLENE	UG/L	0.10	50	(A1)
VINYL CHLORIDE	UG/L	0.10	2	(D1)
RADIONUCLIDES				
TRITIUM	BQ/L	7.0	40000	(A1)
GROSS ALPHA COUNT	BQ/L	0.04	0.55#	(D1)
GROSS BETA COUNT	BQ/L	0.04	N/A	
COBALT 60	BQ/L	0.70	N/A	
CESIUM 134	BQ/L	0.70	N/A	
CESIUM 137	BQ/L	0.70	50	(A1)
IODINE 131	BQ/L	0.70	10	(A1)

Equal to 15.0 Picocuries/litre

DRINKING WATER SURVEILLANCE PROGRAM
PROGRAM DESCRIPTION

The Drinking Water Surveillance Program (DWSP) for Ontario monitors drinking water quality at municipal water supply systems. The DWSP Database Management System provides a computerized drinking water quality information system for the supplies monitored. The objectives of the program are to provide:

- immediate, reliable, current information on drinking water quality;
- a flagging mechanism for guideline exceedance;
- a definition of contaminant levels and trends;
- a comprehensive background for remedial action;
- a framework for assessment of new contaminants; and
- an indication of treatment efficiency of plant processes.

PROGRAM

The DWSP officially began in April 1986 and is designed to eventually include all municipal water supplies in Ontario. In 1992, 109 systems were being monitored. Water supply locations have been prioritized for surveillance based primarily on criteria such as population density, probability of contamination and geographical location.

An ongoing assessment of future monitoring requirements at each location will be made. Monitoring will continue at the initial locations at an appropriate level and further locations will be phased into the program as resources permit.

A major goal of the program is to collect valid water quality data in context with plant operational characteristics at the time of sampling. As soon as sufficient data have been accumulated and analyzed, both the frequency of sampling and the range of parameters may be adjusted accordingly.

Assessments are carried out at all locations prior to initial sampling, in order to acquire complete plant process and distribution system details and to designate (and retrofit if necessary) all sampling systems and locations. This ensures that the sampled water is a reflection of the water itself.

Samples are taken of raw (ambient water) and treated water at the treatment plant and of consumer's tap water in the distribution system. In order to determine possible effects of distribution on water quality, both standing and free flow water in old and new sections of the distribution system are sampled. Sampling is carried out by operational personnel who have been trained in applicable procedures.

Comprehensive standardized procedures and field test kits are supplied to sampling personnel. This ensures that samples are taken and handled according to standard protocols and that field testing will supply reliable data. All field and laboratory analyses are carried out using "approved documented procedures". Most laboratory analyses are carried out by the Ministry of Environment and Energy (MOEE), Laboratory Services Branch. Radionuclides are analyzed by the Ministry of Labour.

DATA REPORTING MECHANISM

When the analytical results are transferred from the MOEE laboratory into the system, printouts of the completed analyses are sent to the MOEE District Officer, appropriate operational staff and are also retained by the DWSP unit.

PROGRAM INPUTS AND OUTPUTS

There are four major inputs and four major outputs in the program.

Program Input - Plant and Distribution System Description

The system description includes plant specific non-analytical information acquired through a questionnaire and an initial plant visit. During the initial assessment of the plant and distribution system, questionnaire content is verified and missing information added. It is intended that all data be kept current with scheduled annual updates.

The Plant and Distribution System Description consists of the following seven components:

1. PROCESS COMPONENT INVENTORY
All physical and chemical processes to which the water is subjected, from the intake pipe to the consumers' tap (where possible), are documented. These include: process type, general description of physical structures, material types, sizes, and retention time for each process within the plant. The processes may be as simple as transmission or as complex as carbon adsorption.

2. TREATMENT CHEMICALS
Chemicals used in the treatment processes, their function, application point, supplier and brand-name are recorded. Chemical dosages applied on the day of sampling are recorded in DWSP.

3. PROCESS CONTROL MEASUREMENTS
Documentation of in-plant monitoring of process parameters (eg. turbidity, chlorine residuals, pH, aluminum residuals) including methods used, monitoring locations and frequency is contained in this section. Except for the recorded Field Data, in-plant monitoring results are not retained in DWSP but are retained by the water treatment plant personnel.

4. DESIGN FLOW AND RETENTION TIME
Hydraulic capacity, designed and actual, is noted here. Retention time (the time that a block of water is retained in the plant) is also noted. Maximum, minimum and average flow, as well as a record of the flow rate on the day of sampling, are recorded in DWSP.

5. DISTRIBUTION SYSTEM DESCRIPTION
This area includes the storage and transmission characteristics of the distribution system after the water leaves the plant.

6. SAMPLING SYSTEM

Each plant is assessed for its adequacy in terms of the sampling of bacteriological, organic and inorganic parameters. Prime considerations in the assessment and design of the sampling system are:

i/ the sample is an accurate representation of the actual water condition, eg. raw water has had no chemical treatment;

ii/ the water being sampled is not being modified by the sampling system;

iii/ the sample tap must be in a clean area of the plant, preferably a lab area; and

iv/ the sample lines must be organically inert (no plastic, ideally stainless steel).

It is imperative that the sampled water be a reflection not of the sampling system but of the water itself.

The sampling system documentation includes: origin of the water; date sampling was initiated; size, length and material type (intake, discharge and tap); pump characteristics (model, type, capacity); and flow rate.

7. PERSONNEL

This section contains the names, addresses and phone numbers of current plant management and operational staff, distribution system management and operational staff, Medical Officer of Health and appropriate MOEE personnel associated with the plant.

Program Input - Field Data

The second major input to DWSP is field data. Field data is collected at the plant and from the distribution system sites on the day of sampling. Field data consists of general operating conditions and the results of testing for field parameters. General operating conditions include chemicals used, dosages, flow and retention time on the day of sampling, as well as, monthly maximum, minimum and average flows. Field parameters include turbidity, chlorine residuals (free, combined and total), temperature and pH. These parameters are analyzed according to standardized DWSP protocols to allow for interplant comparison.

Program Input - Laboratory Analytical Data

The third major input to DWSP is Laboratory Analytical Data. Samples gathered from the raw, treated and distribution sampling sites are analyzed for the presence of approximately 180 parameters at a frequency of two to twelve times per year. Sixty-five percent of the parameters are organic. Parameters measured may have health or aesthetic implications when present in drinking water. Many of the parameters may be used in the treatment process or may be treatment by-products. Due to the nature of certain analytical instruments, parameters may be measured in a "scan" producing some results for parameters that are not on the DWSP priority list, but which may be of interest. The majority of parameters are measured on a routine basis. Those that are technically more difficult and/or costly to analyze, however, are done less frequently. These include Specific Pesticides and Chlorophenols.

Although the parameter list is extensive, additional parameters with the potential to cause health or aesthetic related problems may be added provided reliable analytical and sampling methods exist.

All laboratory generated data is derived from standardized, documented analytical protocols. The analytical method is an integral part of the data and as methods change, notation will be made and comparison data documented.

Program Input - Parameter Reference Information

The fourth major input to DWSP is Parameter Reference Information. This is a catalogue of information for each substance analyzed on DWSP. It includes parameter name and aliases, physical and chemical properties, basic toxicology, world-wide health limits, treatment methods and uses. The Parameter Reference Information is computerized and can be accessed through the Query function of the DWSP database. An example is shown in figure 1.

Program output - Query

All DWSP information is easily accessed through the Query function, therefore, anything from addresses of plant personnel to complete water quality information for a plant's water supply is instantly available. The DWSP computer system makes relatively complex inquiries manageable. A personal password allowing access into the DWSP query mode in all MOEE offices is being developed by the DWSP group.

Program Output - Action Alerts

Drinking Water quality in Ontario is evaluated against provincial objectives as outlined in the Ontario Drinking Water Objectives publication. Should the reported level of a substance in treated water exceed the Ontario Drinking Water Objective, an "Action Alert" requiring resampling and confirmation is issued. This assures that operational staff, health authorities and the public are notified as soon as possible of the confirmation of an exceedance and remedial action taken. This report supplies a history of the occurrence of past exceedances at the plant plus a historical summary on the parameter of concern.

In the absence of Ontario Drinking Water Objectives, guidelines/limits from other agencies are used. The Parameter Listing System, published by MOEE (ISBN 0-7729-4461-X), catalogues and keeps current guidelines for 650 parameters from agencies throughout the world. If these guidelines are exceeded, the results are flagged and evaluated by DWSP personnel. An "Action Alert" will be issued if warranted.

Program Output - Report Generation

Custom reports can be generated from DWSP to meet MOEE Regional needs and to respond to public requests.

Program Output - Annual Reports

It is the practice of DWSP to produce an annual report containing analytical data along with companion plant information.

FIG.1

PARAMETER REFERENCE INFORMATION

NAME:	BENZENE
CAS#:	71-43-2
MOLECULAR FORMULAE:	C_6H_6
DETECTION LIMIT:	(FOR METHOD POCODO) 0.05 μg/L
SYNONYMS:	BENZOL; BENZOLE; COAL NAPHTHA; CARBON OIL (27) CYCLOHEXATRIENE (41)
CHARACTERISTICS:	COLOURLESS TO LIGHT-YELLOW, MOBILE, NONPOLAR LIQUID, OF HIGHLY REFRACTIVE NATURE, AROMATIC ODOUR; VAPOURS BURN WITH SMOKING FLAME (30)
PROPERTIES:	SOLUBILITY IN WATER: 1780-1800 mg/L AT 25C (41) THRESHOLD ODOUR: 0.5 - 10 PPM IN WATER THRESHOLD TASTE: 0.5 mg/L IN WATER (39) ENVIRONMENTAL FATE: MAY BIOACCUMULATE IN LIVING ORGANISMS AND APPEARS TO ACCUMULATE IN ANIMAL TISSUES THAT EXHIBIT A HIGH LIPID CONTENT OR REPRESENT MAJOR METABOLIC SITES, SUCH AS LIVER OR BRAIN; SMALL QUANTITIES EVAPORATE FROM SOILS OR ARE DEGRADED RATHER QUICKLY (80)
SOURCES:	COMMERCIAL: PETROLEUM REFINING; SOLVENT RECOVERY; COAL TAR DISTILLATION (39); FOOD PROCESSING AND TANNING INDUSTRIES; COMBUSTION OF CAR EXHAUST. ENVIRONMENTAL: POSSIBLE SOURCE IS RUNOFF.
USES:	DETERGENTS; NYLON; INTERMEDIATE IN PRODUCTION OF OTHER COMPOUNDS, SUCH AS PESTICIDES; SOLVENT FOR EXTRACTION AND RECTIFICATION IN RUBBER INDUSTRY; DEGREASING AND CLEANSING AGENT; GASOLINE.
REMOVAL:	THE FOLLOWING PROCESSES HAVE BEEN SUCCESSFUL IN REMOVING BENZENE FROM WASTEWATER: GAC ADSORPTION, PRECIPITATION WITH ALUM AND SUBSEQUENT REMOVAL VIA SEDIMENTATION, COAGULATION AND FLOCCULATION, SOLVENT EXTRACTION, OXIDATION
ADDITIONAL PROPERTIES:	MOLECULAR WEIGHT: 78.12 MELTING POINT: 5.5°C (27) BOILING POINT: 80.1°C (27) SPECIFIC GRAVITY: 0.8790 AT 20°C (27) VAPOUR PRESSURE: 100 MM AT 26.1°C (27) HENRY'S LAW CONSTANT: 0.00555 ATM-M3/MOLE (41) LOG OCT./WATER PARTITON COEFFICIENT: 1.95 TO 2.13 (39) CARBON ADSORPTION: K=1.0; 1/N=1.6; R=0.97; PH=5.3 (41) SEDIMENT/WATER PARTITION COEFFICIENT: NO DATA

Appendix B

DWSP SAMPLING GUIDELINE

i) Raw and Treated at Plant

General Chemistry	-500 mL plastic bottle (PET 500) -rinse bottle and cap with sample water three times -fill to 2 cm from top
Bacteriological	-220 mL plastic bottle with white seal on cap -do not rinse bottle, preservative has been added -avoid touching bottle neck or inside of cap -fill to top of red label as marked
Metals	-500 mL plastic bottle (PET 500) -rinse bottle and cap three times -fill to 2 cm from top -add 10 drops nitric acid (HNO_3) (**Caution:** HNO_3 is corrosive)
Volatiles (duplicates) (OPOPUP)	-45 mL glass vial with septum (teflon side must be in contact with sample) -do not rinse bottle -fill bottle completely without bubbles
Organics (OWOC),(OWTRI)	-1 L amber glass bottle per scan -do not rinse bottle -fill to 2 cm from top
Specific Pesticides (OWCP),(PEOP),(PECAR)	-as per Organics -three extra bottles must be filled
Polyaromatic hydrocarbons (OAPAHX)	-1 L amber glass bottle per scan -do not rinse bottle -fill to 2 cm from top -add 25 drops of sodium thiosulphate
Cyanide (Treated only)	-500 mL plastic bottle (PET 500) -rinse bottle and cap three times -fill to 2 cm from top -add 10 drops sodium hydroxide (NaOH) (**Caution:** NaOH is corrosive)
Mercury	-250 mL glass bottle -rinse bottle and cap three times -fill to top of label -add 20 drops each nitric acid (HNO_3) and potassium dichromate ($K_2Cr_2O_7$) (**Caution:** HNO_3&$K_2Cr_2O_7$ are corrosive)

Phenols	-250 mL glass bottle -do not rinse bottle, preservative has been added -fill to top of label
Radionuclides (as scheduled)	-4 L plastic jug -do not rinse, carrier added -fill to 5 cm from top
Organic Characterization (GC/MS - once per year) (PBVOL),(PBEXT)	-1 L amber glass bottle; instructions as per organic -250 mL glass bottle -do not rinse bottle -fill completely without bubbles

Steps:

1. Let sampling water tap run for an adequate time to clear the sample line.

2. Record time of day on submission sheet.

3. Record temperature on submission sheet.

4. Fill up all bottles as per instructions.

5. Record chlorine residuals (free, combined and total for treated water only), turbidity and pH on submission sheet.

6. No smoking in area of sample location.

ii) Distribution Samples (standing water)

General Chemistry	-500 mL plastic bottle (PET 500) -rinse bottle and cap with sample water three times -fill to 2 cm from top
Metals	-500 mL plastic bottle (PET 500) -rinse bottle and cap three times -fill to 2 cm from top -add 10 drops nitric acid (HNO_3) (Caution: HNO_3 is corrosive)

Steps:

1. Record time of day on submission sheet.

2. Place bucket under tap and open cold water.

3. Fill to predetermined volume.

4. After mixing the water, record the temperature on the submission sheet.

5. Fill general chemistry and metals bottles.

6. Record chlorine residuals (free, combined and total), turbidity and pH on submission sheet.

iii) Distribution Samples (free flow)

General Chemistry	-500 mL plastic bottle (PET 500) -rinse bottle and cap with sample water three times -fill to 2 cm from top
Bacteriological	-250 mL plastic bottle with white seal on cap -do <u>not</u> rinse bottle, preservative has been added -avoid touching bottle neck or inside of cap -fill to top of red label as marked
Metals	-500 mL plastic bottle (PET 500) -rinse bottle and cap three times -fill to 2 cm from top -add 10 drops nitric acid HNO_3 (**Caution:** HNO_3 is corrosive)
Volatiles (duplicate) (OPOPUP)	-45 mL glass vial with septum (teflon side must be in contact with sample) -do <u>not</u> rinse bottle, preservative has been added -fill bottle completely without bubbles
Organics (OWOC)	-1 L amber glass bottle per scan -do <u>not</u> rinse bottle -fill to 2 cm from top
Polyaromatic Hydrocarbons (OAPAHX)	-1 L amber glass bottle per scan -do <u>not</u> rinse bottle -fill to 2 cm from top -add 25 drops of sodium thiosulphate

<u>Steps:</u>

1. Record time of day on submission sheet.

2. Let cold water flow for five minutes.

3. Record temperature on submission sheet.

4. Fill all bottles as per instructions.

5. Record chlorine residuals (free, combined and total), turbidity and pH on submission sheet.